LAWYERS AND LEGAL INFORMATION:

The Use of Information Sources & Technology in Legal Research

By
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EXECUTIVE SUMMARY

The study reported here attempts to describe lawyers' use of information sources and information technology in their research. In addition to describing patterns of research, the study tests a theoretical model which explains research behaviour.

Information-seeking in legal research is not a unidimensional concept. The study uncovers three dimensions of information seeking and media use by the practicing lawyer. These dimensions — information need, cost sensitivity, and autonomy — help us understand why print and online legal information sources are complementary for some lawyers and why they are considered substitutes by other lawyers. The results of the study are summarized below.

GENERAL RESEARCH PATTERNS

Part I of the report focuses on the general practice of research among Ontario lawyers. Key findings include:

Purpose of Research

- For most lawyers, research is motivated by specific problems related to their case work.
- Getting the most timely information is an important reason for doing research.
- Lawyers are not interested in browsing legal information sources.

Amount of Research

- On average, lawyers spend 5.2 hours per week (or 11% of their work week) doing legal research.
- 4% of the lawyers surveyed spend less than an hour a week in research activities.
- 14% of lawyers spend more than 10 hours a week doing research.

- Lawyers in urban practices spend a greater amount of time in research activities (5.7 hours per week) than lawyers in rural areas (4 hours per week).

- Lawyers who practice in the area of real property do significantly less research than lawyers who practice in other areas of the law.

- Lawyers in large firms spend more time in research activities than lawyers in small firms and sole practitioners.

Resources for Research

- 94% of lawyers have access to a law library at their place of work.

- Only 38% of lawyers have access to online information technology at work, and only 3% have access to online databases from their own office.

- Two-thirds of the lawyers do their own research all of the time or frequently. Ten percent seldom or never do research themselves.

- Only 1% of lawyers always have an assistant do research for them, while four in ten lawyers seldom or never have an assistant perform research functions.

- In terms of office automation and the use of information technologies, only word processing is used by a majority of lawyers (87.8%) in their work. Other technologies such as computerized accounting and billing, electronic in-house retrieval systems and electronic mail are used by less than half the lawyers in Ontario.

Use & Evaluation of Print Information Sources

- Eight of every ten lawyers use print sources of information at least a few times every week.

- The most used print sources of legal information are (1) *Ontario Reports*, (2) legal textbooks, (3) *Statutes of Ontario*, (4) *Index to the Revised Statutes of Ontario*, and (5) law journals.

- Print information sources were rated as "average" to "good." Relatively, the strongest characteristics of print sources are their usefulness, accessibility, and readability. The weakest characteristics of print sources are their cost, ease of use, and organization of information.

Use & Evaluation of Online Information Sources

- Two out of three lawyers in Ontario do not have access to online information sources at their place of work.
- 34% of lawyers in Ontario use online legal information sources.
- However, online use is infrequent. Only 5% of lawyers in Ontario use online information sources more often than once a week, while 82.6% of lawyers use print information sources more often than once a week.
- The most frequently used sources of online information are (1) *Ontario Reports Plus*, (2) *Supreme Court Reports*, (3) *All Canada Weekly Summaries*, and (4) *Statutes of Ontario*.
- Cost was the reason most often cited for not using online legal information.

EXPLAINING RESEARCH BEHAVIOUR

A model of information seeking behaviour in professional work is developed which incorporates relevant cost, task-related, organizational, environmental and individual variables.

Several factors are found to influence the amount of information seeking by lawyers. The cost of one's time is negatively related to the amount of research done. In addition, information seeking is positively influenced by the equivocality of information and the amount of information used in one's work. The length of time in the profession is negatively related to the amount of information seeking.

As expected, access is the most important factor relating to the relative use of online information technology. After accounting for access, the cost of one's time, while negatively related to information

seeking is found to be positively related to the relative use of online technology, as is one's task variability.

Among users of online media, rural lawyers use online information sources to a greater extent than urban lawyers.

DIMENSIONS OF LEGAL INFORMATION MEDIA USE

It was found that those variables that influence the amount of research a lawyer does also affect the use of online technology, but in the opposite direction. In fact, the use of legal information media for legal research is found to be multi-dimensional.

Patterns of media use in legal research can be explained by three functions. The first function, characterized as one's **information need**, is most closely related to one's task requirements and the need to do legal research. The second function represents one's **autonomy** and is characterized by the degree of control one has in organizing one's work and information environment. The third function represents one's **cost sensitivity** and is most closely associated with the relative cost of access to the media and one's time cost of using the media.

An analysis of these dimensions suggests:

- Those lawyers with a high need for information in their work and low sensitivity to cost use print and online information sources in a complementary fashion.
- For those lawyers who have moderate need for information and experience a greater degree of cost sensitivity, online and print information are substitutes.
- The predominant use of online information (rather than print sources) is a function of the degree of control one has in shaping one's information environment in one's work.

The explanation of research behaviour and the dimensions of information seeking in legal research discussed in this study give us a better understanding of the functioning of legal information markets and the dissemination of legal information in Canada.

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1. INTRODUCTION

This study looks at how lawyers use information sources and information technology in their work. In addition to describing patterns of legal research, the study attempts to explain why lawyers do research the way they do. Specifically, why do some lawyers do little research while others do a lot of research? And, to what extent do the characteristics of print and online delivery of the same information content affect the information-seeking behaviour of lawyers?

In 1973, *Operation Compulex* examined the information needs of practicing lawyers. One of the major purposes of the study was to see whether technological developments in the information field might be of assistance to the practicing lawyer, and "whether the practicing lawyer was experiencing difficulties with his current manual approach to dealing with information and if so, how developments in information technology might be of assistance to him." [1]

The present study, in some ways, updates the information achieved from *Operation Compulex* fifteen years ago. In 1973, online databases were a relatively new information technology in the law office. In 1988, the development of the personal computer and other technology makes online information easily accessible to individual lawyers. This study, then, first looks at the diffusion of online databases among lawyers. Secondly, the present study looks at the potential for migration from a predominantly print environment to an electronic environment for the practicing lawyer.

However, the present study is more limited in scope than *Operation Compulex*. While *Operation Compulex* focused on a variety of information needs of the practicing lawyer, this study looks at the use of information in the practice of legal research only. This more narrow focus was chosen for two reasons. First, research forms an important part of the practice of law and a significant part of a lawyer's value-added work. This study explores the uses of information sources by the practicing lawyer when doing legal research. Second, legal research forms an active part of information seeking on the part of the practicing lawyer. By focusing on the practice of

1 Department of Justice (Canada), *Operation Compulex: Information Needs of the Practicing Lawyer*, Ottawa: Ministry of Supply and Services, 1980, p. 1.

legal research, we are able to move beyond description of research practice toward an explanation of research behaviour.

In this chapter the historical background out of which this study emerges is briefly discussed. Then, an overview of the study methodology and the organization of this report are presented.

1.1 HISTORICAL BACKGROUND

Industrialized countries are experiencing a transition from industrial to information-based economies (Machlup, 1962; Bell, 1973; Stearns, 1974; Porat, 1978; Beniger, 1986). Three changes characterize this information economy. First, there has been an increase in the number of individuals involved in "information work," and an interest in understanding the nature of information work. Secondly, the rapid growth in the body of knowledge requires access to growing amounts of information and, therefore, focuses attention on an individual's abilities to access and process information. Thirdly, information technology has become part of the infrastructure (Huber, 1984), increasing the speed and breadth of information distribution, and becoming an important competitive and strategic advantage for workers and organizations (Benjamin, *et al.*, 1984). Each of these changes can be identified in the practice of law.

1.11 Law as Information Work

During the last twenty-six years, since the publication of Fritz Machlup's *The Production and Distribution of Knowledge in the United States*, numerous scholars have attempted to define the nature of information work. One recent approach to information work which holds particular promise is the view of information work as value-added processes (Taylor, 1986; Nass, 1988). The value-added approach focuses on the processes in work which contribute to value-added throughput of workers. This view provides a conceptualization which integrates previously divergent views of information work.[2]

2 For a more complete discussion of the various conceptualizations of information work, see Clifford I. Nass, "Work, Information, and Information Work: A Retrospective and Prospective Framework," in Ida Harper Simpson and Richard L. Simpson (eds.), *Research in the Sociology of Work, Vol. 4: High Tech Work*, Greenwich, CT: JAI Press, 1988.

The lawyering process involves many value-added information processes: organizing, analyzing, judgmental, and decision processes. First, the lawyer must assemble the facts of the case and decide what legal issues the facts raise (analyzing). Second, one must refer to one's secondary sources, i.e., the citators, abridgements, textbooks, to organize the search for the relevant legislation or judicial decisions (organizing). Third, having identified the relevant decisions one must ensure their validity in the light of more recent decisions to determine their current legal status (analyzing). The lawyer must then relate the relevant law to the problem at hand in order to offer legal counsel (judgmental). Finally, the lawyer may represent his client in bargaining or litigation (decision processes). The present study focuses on phase two and phase three of this value-added process — the retrieval and updating of relevant authorities through legal research.

1.12 Growth of Knowledge

Another characteristic of the information economy is the tremendous growth in the body of scientific and professional knowledge. Anderla (1973) estimated that in the past three centuries (since the appearance of the first two scientific journals in the seventeenth century) all indicators of the volume of science have increased by a factor of about 106. In a similar illustration, Piatier (1976) described the growth in 'pure science' and technical publications:

> "There were 50 scientific journals in 1750, 100 in 1800, 1,000 in 1900, and there are probably more than 100,000 today. More recently, an exponential curve of growth similar to that for 'pure science' has been observed in the case of technical publications."[3]

In a similar estimate of the growth of knowledge in the behavioural sciences, Price (1983) estimated that the literature in experimental psychology has doubled every ten years during this century.

Like all professions, law is based on a large body of theoretical knowledge and the increase in the body of law is well documented.

3 Andre Piatier, "General Reflections on Information and International Statistics," *International Social Science Journal*, 28:3, 1976, p. 6.

A century ago the Harvard Law Library had less than 15,000 volumes. In 1973, it had over 1,000,000 and adds about 20,000 yearly (Hamilton, 1972). The rapid growth in the body of the law was noted as early as 1966, when Kayton wrote:

> "Today, however, there are over 2,300,000 reported cases, and the number of reported American decisions is estimated to be increasing at the rate of 22,000 per month." [4]

The increase in the number of cases reported each year in Canada has also been documented.[5] Not only has the number of reported cases increased, but the number of publications which report cases has also increased. Between 1979 and 1986, there was a 39% increase in the number of law reports in federal and common law jurisdictions in Canada.

Access to this knowledge is essential for the lawyer. However, the exponential increase in the volume of legal materials makes it increasingly difficult to access relevant information. As Colin Tapper has pointed out, "it is...in the nature of a lawyers' work that he must be able to say with complete confidence that he has considered all the documents of the past relevant to his case, or that there are none which are relevant." [6]

Slayton (1974) suggested three consequences for the practice of law as a result of this exponential growth in case law. First of all it becomes extremely difficult to find all or even most of the materials relevant to a given legal problem, simply because so much may be relevant; accordingly, lawyers have increasingly come to have an inadequate grasp of what they need to know properly to deal with the issues before them. A second consequence is inefficiency in legal decision-making processes. As legal sources increase in number and size, fewer legal cases are adequately prepared, which results in an

4 Irving Kayton, Retrieving Case Law by Computer: Fact, Fiction, and Future," *35 George Washington Law Review 1*, 1966, p. 6.

5 See Shirley Lounder, *Case Law Reporting in Canada*, Ottawa, Canadian Law Information Council, 1982.

6 Colin Tapper, "Lawyers and Machines," *26 Modern Law Review 121*, p. 50.

increase in the number of appeals and re-litigation in proportion to the discovery of cases decided in ignorance of relevant authorities. A third consequence is an increase in intellectual and geographic insularity. Faced with an overwhelming amount of information, the lawyer seeks to restrict what it is that he must consult, resulting in a "divergence of different legal systems and even of different branches of the same legal system." [7] The legal information problem, then, is not just a problem of exponential growth, but also of (1) current awareness and (2) changing significance of legal materials.

The increase in the amount of information does not necessarily mean that there has been an increase in the quality of information produced. Rather, it means that the individual or organization requires better analytical tools to analyze information. As Piatier quipped, "nostalgia for the newspaper of one's choice parallels that of the research worker, who would also welcome a bibliography, statistical data and text exactly suited to his needs at a given time." [8]

1.13 New Media, New Services

Accompanying the increase in the amount of information work and the tremendous growth in the body of knowledge has been the development of communication technologies to allow for the dissemination of information more rapidly and over greater distances. The mass media emerged during the period of industrialization over a century ago. During the past thirty years, the central technology has been the computer and its capacity to store and process large amounts of digital data. In addition to computer technology, new information services have emerged as a result of the convergence of the computer with telecommunications. The convergence of the computer and telecommunications allows for the distribution of information over a greater distance at a greater speed. This change has contributed to a more turbulent information environment for lawyers and other information workers.

Online Information Services

One of the new services to be developed during the past twenty years is that of online secondary and primary information services, or

7 Colin Tapper, "World Cooperation in the Mechanization of Legal Information Retrieval," *9 Jurimetrics Journal 1*, 1968, p. 3.

8 Andre Piatier, *op cit.*, p. 8.

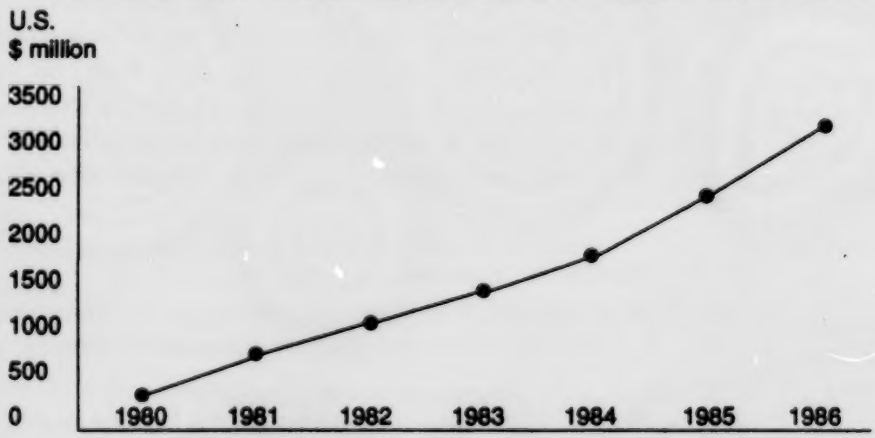
online databases as they are commonly called. The roots of such services lie in the need to manage the tremendous growth of the body of knowledge. One of the first electronic secondary information services was the use of computers to handle such information management tasks as indexing and bibliographic work.

Online computer databases allow immediate interaction between the user and computer and are accessible via communication facilities such as conventional telephone, microwave, fibre optics and satellite networks. These databases provide information in two general forms — reference and source. Reference databases may contain bibliographic references, citation indexes, and textual abstracts, while source databases contain full text material and numeric data such as time series or company financial reports.

Over the last decade there has been considerable growth in the development of computer based information retrieval systems. Use of these systems has grown tremendously. There are nearly 3000 publicly available online databases in North America, developed by nearly 1400 producers and accessible through 450 online vendors (Cuadra Associates, 1985). Annual growth rates in the online industry have averaged approximately 20% (Williams, 1982). Figure 1-1 illustrates the revenue growth in the online database industry between 1980 and 1986.

Figure 1-1

WORLD-WIDE REVENUE GROWTH OF ONLINE DATABASES



Source: Department of Communications, 1987

As might be expected, as the number of databases has grown, so has the number of searches performed. In 1984 there were approximately 700,000 searches performed. In 1983 there were over eight million searches (Williams, 1985a). Data from the United States (Table 1-1) show that legal and business organizations were the largest users of online databases (Williams, 1985a).

In many cases these business and legal databases are substitutes for information contained in print media, such as newspapers, magazines, journals and books. They offer rapid access to information, and are often seen as providing a strategic advantage to users. And while business and individuals are being urged to use these services, their adoption often requires a major investment in money, time, effort, and the restructuring of established procedures.

Table 1-1

DATABASE USAGE BY USER CLASS, 1982

User Class	Number of Databases Accounting for Bulk of Usage	Percent of Searching Using Those Databases	Total # of Databases Used	Rank in Hourly Usage	Rank in Vendor Charges
Legal	5	95.6	110	1	1
Industry	13	58.0	252	2	2
Government	11	57.9	227	3	3
Medical	6	78.5	215	4	5
Academe	7	83.0	242	5	4
Public Library	11	54.8	208	6	6
Other	13	56.1	153	7	7
Individual Brokers	13	60.1	198	8	8

Source: Williams, 1985

Computer Assisted Legal Research (CALR)

The application of online systems to the practice of law and legal research is not new. The first electronic retrieval system was probably that devised by Professor John Horty at the University of Pittsburgh Health Law Center, beginning in 1959. The Health Law Project evolved into Aspen Systems Corporation, a commercial firm founded in 1968. In 1967, the Ohio State Bar Association founded Ohio Bar Automated Research (OBAR) which later became LEXIS, one of the leading legal databases today. In Canada,

DATUM/SEDOJ (Documentation automatique de textes juridiques de l'Université de Montréal) was established in 1968 by the Faculty of Law and the Computing Centre of the University of Montreal and QUIC/LAW was founded by the Faculty of Law at Queen's University in 1969. Today, there are over 100 legal databases available through more than ten vendor systems.

Computer assisted legal research systems operate in the same manner as other online information systems. They allow the researcher to quickly search massive amounts of information in either bibliographic or full-text form. But, while CALR can save time and increase productivity, CALR has disadvantages as well. Namely, CALR systems retrieve only those cases as specified by the search and they do not eliminate irrelevant cases from the search. In addition, the cost of CALR can be substantial.

There have been numerous studies in the use of computers in the dissemination of legal information during the past twenty years in both the U.S. and Canada. Much of this research is from the supply side perspective in that it examines the characteristics of legal databases and searching procedures (Hambleton, 1976; Sprowl, 1976; Munro, Bolanos and May, 1978; Greguras and Carlisle, 1980; Rust, 1980; Welsh, 1980; Harrison, 1981; and Bull, 1981). Relatively few studies have examined the demand side of this new technology — the motivation for use and the effects of use on the dissemination of legal information. The present study attempts to fill this gap in the literature by examining who uses online information technology, why they use it, and the effects of using online technology on one's work.

1.2 METHODOLOGY

Because the focus of the study is the individual lawyer, rather than the firm, a systematic random sample of 2000 lawyers in Ontario was drawn from the *Canadian Law List, 1987.*

The survey instrument, which appears in Appendix I, was pre-tested in late June and early July, 1987. After revisions based on the pre-test, data were collected during August and September, 1987. A self-administered questionnaire was mailed, along with two follow-up letters to non-respondents, at two week intervals. A total of three

mailings were used in the gathering of data, with respondents removed from the mailing list at each stage.

Of the 2,000 lawyers in the original sample, 97 questionnaires were returned as "undeliverable" by the post office or by individuals who reported that they were "not currently in practice," or "retired." Of the net sample (1,903), 751 completed questionnaires were processed, representing an effective response rate of 39.5%. While one would hope to achieve a higher response rate in a sample survey, this response rate is above average for surveys among professionals.

1.3 ORGANIZATION OF THE STUDY

This report is organized so that the reader may choose the most relevant information quickly. For those readers who are interested in the amount of research lawyers perform and the sources they use in their research, Part I will be of greater interest than Part II.

Part I of the report focuses on the current practice of legal research. Chapter 2 presents a brief overview of the information needs of practicing lawyers and the influence of these needs on research. Then, in Chapter 3, results from the field survey are presented. The discussion focuses on research resources available to lawyers, the amount of research lawyers perform and differences among lawyers in their research patterns. In addition, the sources used by Ontario lawyers are reviewed in this chapter as well as an evaluation of those sources by respondents.

Part II of the report focuses on explanatory models of legal research. Chapter 4 presents the theoretical model. This model, drawn from social scientific literature in communication, information science and management science, identifies those factors affecting information seeking in professional work. Chapter 5 presents details of the operationalization of variables and data analysis techniques. Chapter 6 presents the results of the explanatory model of information seeking in the practice of law. Specifically, what explains the amount of research performed by lawyers and the use of media in legal research? In Chapter 7, an explanation of the relative use of online and print media in legal research is developed. Why do some lawyers use predominantly print media in their research and while others use predominantly online and yet others use the two media in a

complementary way? The final chapter discusses the relevance of the results for (a) legal information markets in Canada and (b) the dissemination of legal information.

PART I
THE PRACTICE OF LEGAL RESEARCH

2. LAWYERS AND LEGAL INFORMATION

The practice of law, like all professional work, is information intensive. The legal information problem discussed in the previous chapter — the rapid growth in case law, the cumulative nature of law and the changing significance of legal information — makes it necessary for lawyers to spend part of their work time (a) keeping up to date in their profession and (b) seeking legal information relevant to each case. Previous studies have suggested that this information seeking occupies approximately one-third of a lawyer's time. While the amount and type of information sought might vary from case to case, the fact that lawyers regularly must perform legal research suggests that there are, likely, enduring patterns for most lawyers in their use of information media.

Workers in the professions have two primary types of information needs — application needs and nutritional needs (Mick *et al.*, 1980). Application needs revolve around information which is applied to solving a specific problem or answering a specific question. Nutritional needs are information needs which focus on "keeping up-to-date." In an attempt to identify application and nutritional information needs, Jahoda *et al.* (1978) identified seven purposes for seeking information: (1) to solve a particular problem, (2) to gain exhaustive access to a particular topic, (3) to gain current awareness & to keep up-to-date, (4) to get supplemental information, (5) to get historical information, (6) to get the most timely information, and (7) to browse information sources for things missed (Jahoda, Bayer, and Needham, 1978; Blood, 1983).

For the lawyer, the types of information needed fall into three categories. First, lawyers have needs for "legal information" — current, timely, complete and accurate case, statute and procedural law as well as the aids such as digests, citators and tests which help uncover the relevant law. Secondly, lawyers need legally related information, i.e., real and personal property information, personal damage award information and court scheduling information. Finally, the lawyer needs operational information such as accounting information concerning his practice and his need to produce such things as wills, contracts and correspondence (DOC, 1980).

Of the many information acquisition behaviours exhibited by lawyers, the most common way for a lawyer to seek applicational information is through the process of legal research. Estimates of how much time lawyers spend doing legal research vary from study to study. Most estimates indicate that most of a lawyer's research time is spent on determining relevance, rather than on retrieval. Ebersole (1980) estimated that the average lawyer spends from two to seven percent of his or her time "finding the law."

There remains much debate in the legal literature on the extent and nature of legal research. Certainly, the term research means something much different for the practicing lawyer than for a professor of law or government employee. However, two broad types of legal research can be distinguished — practice and scholarship. Practice research is the research typically done by lawyers, judges, and legislators in the performance of their functions in law offices, courts, and legislatures. Legal scholarship is the doctrinal and non-doctrinal research commonly done in law schools and graduate schools.[1] Practice research is pragmatic, goal-oriented, keyed to real cases, and is designed to win disputes and influence people. Legal research, as used in the present study, refers to practice research, rather than other types of legal scholarship.

For the practicing lawyer, legal research is motivated by the search for authority (Barkan, 1987). *Stare decisis*, the doctrine that precedents should be followed, is fundamental to legal research. The doctrine of *stare decisis* requires the rule of law in past cases to control subsequent cases that are substantially similar. While statutes, as opposed to case law, are generally perceived as being more determinate than cases, "it has usually been necessary for the courts to interpret, clarify and explain statutory language in the course of resolving legal controversies".[2] Thus, a lawyer must be

1 For a discussion of both types of legal research, see Frederick C. Hicks, *Materials and Methods of Legal Research*,(2nd ed.), 1933; J. Jacobstein and R. Mersky, *Fundamentals of Legal Research* (1987 ed.); Ronald A. May, *Sense and Systems in Automated Law Research*, Chicago: American Bar Association, 1975; and Steven M. Barkan, "Deconstructing Legal Research: A Law Librarian's Commentary on Critical Legal Studies, *Law Library Journal*, 79:612-637, 1987.

2 Steven M. Barkan, "Deconstructing Legal Research: A Law Librarian's Commentary on Critical Legal Studies," *Law Library Journal*, 79:612-637, 1987, p. 623.

sure that he has searched all the relevant authority, either mandatory (binding) or persuasive, in the published sources of the law that will be determinative of present legal problems.

This need for access to authority has led to the development of many information services available to lawyers — digests, codes, law reports, indexes, encyclopedias, computers and other tools — and the lawyer's research methods are necessarily determined by the structure of those tools. In many cases, the same information is available in different structures (e.g., in law reports and online). The legal information environment of the practicing lawyer, then, is characterized by a need for up-to-date information usually focused on a particular problem. In addition, resource constraints, particularly time constraints, and the emergence of new information technologies make the research environment more complex.

In the next chapter, we explore patterns of legal research by practicing lawyers and the environment in which they do research. Particular attention is focused on how much research lawyers do, what sources of information they use and their evaluation of these information sources. The use of online information technology is also discussed.

3. GENERAL RESEARCH PATTERNS

Lawyers in Ontario reported spending about the same amount of time doing legal research in 1987 as in 1973. *Operation Compulex* reported that lawyers spent approximately 10% of their time performing legal research. In the current study, Ontario lawyers reported spending 11% of their work time, on average, doing legal research.

In the following sections, survey results are presented covering general patterns of research among lawyers. The purpose of research, resources available to support research, the amount of research and use of specific print and online sources of information are covered. As well, lawyers' evaluations of legal information sources they use are presented.

3.1 PURPOSE OF RESEARCH

Respondents were asked to rate the importance of specific reasons for doing research. Each reason was rated on a five point scale from "almost never important" (1) as a reason for research to "almost always important" (5).

For most lawyers, research is focused around problem-solving related to their work. Of all the reasons listed, the most important reason for doing research was to solve a particular problem (see Table 3-1). Considered above average in importance were to get the most timely information and to "keep up-to-date." Below average in importance for Ontario lawyers were gaining exhaustive access to a particular topic and to browse information sources. The least important reason was to get historical information.

Table 3-1
REASONS FOR DOING LEGAL RESEARCH

Rank Order	Reason	Mean Score (Scale of 1-5)
1.	To solve a particular problem.	4.59
2.	To get the most timely information.	3.80
3.	To gain current awareness and to keep up-do-date.	3.38
4.	To gain exhaustive access to a particular topic.	2.95
5.	To get supplemental information.	2.75
6.	To browse information sources for new things I may have missed or not thought of.	2.62
7.	To get historical information.	1.70

3.2 RESOURCES FOR RESEARCH

Access is a necessary, but not sufficient, factor enabling individuals to use resource material. Respondents were asked whether they had access to (a) a library and (b) online databases at their place of work. Because proximity of sources has been shown to influence use, respondents were asked to indicate the proximity of these two research resources to their own office. The availability of human resources to assist in research work also was explored.

3.21 Human Resources

For the vast majority of lawyers, research remains an activity that the individual lawyer performs. Two-thirds of the respondents reported doing research themselves all of the time or frequently (Table 3-2), while only 10.7% reported that they seldom or never do research themselves.

In addition to performing research, a lawyer may also employ human resources to do research activities. One percent of the lawyers in Ontario always has an assistant perform research functions. Almost another three in ten frequently employ an assistant to perform research. On the other hand, four of every ten lawyers in the province seldom or never use an assistant to perform research duties. (Table 3-2).[1]

Table 3-2
HUMAN RESOURCES FOR LEGAL RESEARCH
(N = 751)

	Perform Self %	Others Perform %
Always	21.4	1.1
Frequently	44.3	27.5
Sometimes	23.7	31.5
Seldom	10.4	24.3
Never	.3	15.7

1 Percentages in this and other tables in this chapter may not sum to 100.0% due to rounding.

3.22 Library

A standard feature of a law office is its library. Because print is the traditional medium for legal information, almost all lawyers find it necessary to maintain a collection of law books in their office. About 95% of the lawyers in Ontario have access to a library in their place of work (Table 3-3).

For three out of every four lawyers, the library is easy to get to, being either in their own office or on the same floor.

3.23 Online Access

Unlike access to print sources, only 38% of the lawyers in Ontario have access to online databases at their law office (Table 3-3). Most lawyers who do have access to online databases must access them in another room. Only three in every one hundred lawyers have access to electronic information sources in their own office.

Table 3-3
ACCESS TO LIBRARY AND ONLINE RESOURCES
(N = 751)

	Library %	Online %
No	5.6	61.9
Yes		
In personal office	14.6	3.1
In secretary's office	1.3	2.5
Another room, same floor	60.3	19.0
Different floor, 1 above/1 below	12.2	8.4
More than one floor away	5.2	3.8
Different building	.8	1.3

3.24 Use of other electronic information technology

In an effort to assess the diffusion of other electronic information technology in the law office and the resource environment in the law office, respondents were asked about the availability and use of computerized accounting, billing, calendar control, word processing, electronic in-house retrieval systems and electronic mail.

By far, the technology with the greatest use in the law office environment is word processing equipment (87.7%). Only eight percent of lawyers in the province do not have access to this technology. Each of the other technologies mentioned is used by less than half the lawyers in the province.

Table 3-4
USE OF INFORMATION TECHNOLOGY
(N = 751)

Technology	Use %	Do Not Use %	Not Available %
Word Processing	87.8	4.3	7.9
Computerized Accounting	48.3	14.4	37.4
Electronic In-house retrieval system (precedential material)	38.7	16.9	44.4
Computerized Billing	37.2	20.2	42.6
Electronic Mail	23.9	19.2	56.9

3.3 AMOUNT OF RESEARCH

Numerous questions in the survey focused on the amount and frequency of doing legal research. We purposely did not define the term "legal research." Thus, answers reflect the respondents' own perceptions of what constitutes legal research.

Almost half the lawyers in Ontario (48%) consider they do a "moderate" amount of research. Just over ten percent of the lawyers say they do "very little" or no research in their work, while another 14% consider they do a "large amount" of legal research.

When asked specifically how many hours a week they spend doing legal research, the average was 5.2 hours per week. Four percent of the sample reported spending less than one hour a week doing legal research, while almost nine percent reported spending more than 10 hours per week in research activities.

Respondents were also asked to indicate what percentage of work time this research represented. On average, Ontario lawyers spent 11% of their work time doing research.

Because there are a number of factors which are likely to influence the amount of research a lawyer would perform, analyses were performed to locate possible differences due to the location of one's practice, whether one was in private practice, the type of law practiced, the size of the law firm, the position within the firm, the number of years in practice, and one's sex. Table 4-2 summarizes the results of these tests.

3.31 Differences by Location of Practice

Previous research suggests that urban lawyers confront a greater percentage of complex legal cases and, hence, do more research. These previous results appear to be supported by the current study. Practitioners who practice in an urban environment are more likely to perform a greater amount of research than lawyers in a rural environment. On average, urban lawyers spend 5.7 hours per week in research, while rural lawyers spend four hours per week in research activities (Table 3-5).

Likewise, the percentage of time spent in research is significantly greater for urban lawyers than for rural lawyers. Urban lawyers spend an average of twelve percent of their work week in research while rural lawyers spend about nine percent of their work week in research activities.

3.32 Differences by Area of Specialty

Numerous previous studies have suggested that the area of law that one practices, or one's law specialization, is perhaps the most important influence on research behaviour. Approximately one in four lawyers in Ontario practices primarily in the area of real property, an area of law that requires less research than other areas.

As expected, practitioners in real property spend significantly less time doing research (3.1 hours per week) than other lawyers (5.7 hours per week).

3.33 Differences by Size of Firm

Lawyers in the largest firms reported the greatest amount of research and the greatest percentage of their work week spent in research

activities (Table 3-5). Sole practitioners, on the other hand, do significantly less research than lawyers in partnerships or firms.

Table 3-5
GROUP DIFFERENCES IN THE AMOUNT OF RESEARCH PERFORMED

Variable	Hours/Week in Research (Mean)	Percent of Work Time (Mean)
Location of Practice		
Urban	5.73[a]	12.04[a]
Rural	4.17[b]	8.92[b]
Type of Practice		
Private Practice	4.71[b]	9.81[b]
Other	7.53[a]	16.58[a]
Area of Specialty		
Real Property	3.14[b]	6.51[b]
Other	5.68[a]	12.03[a]
Size of Practice		
Sole Practitioner	3.47[c]	7.36[c]
2-5	4.66[bc]	9.97[bc]
6-14	5.39[ab]	11.11[ab]
15-39	5.93[ab]	12.75[ab]
40 or more	6.74[a]	14.13[a]
Position		
Partner	4.35[a]	9.22[a]
Associate	6.37[a]	13.22[a]
Sole Practitioner	3.27[a]	7.27[a]
Other	8.00[a]	16.48[a]
Age		
Under 30	7.25[a]	15.64[a]
30-34	5.89[ab]	12.44[ab]
35-39	5.30[ab]	11.39[ab]
40-44	4.56[b]	8.73[b]
45-49	4.28[b]	9.47[b]
50-54	3.95[b]	8.24[b]
55-59	3.45[b]	7.15[b]
60 and over	3.63[b]	7.29[b]
Sex		
Male	5.06[b]	10.57[b]
Female	6.13[a]	13.33[a]

Note: For each variable, compare each category of the variable for (a) the mean number of hours per week and (b) the percentage of work time spent in research activities. Means with the same letter are not significantly different.

3.34 Differences by Position in Firm

No differences were found between partners, associates and sole practitioners in the amount of research.

When these results are considered with the results from the size of firm, it seems that it is the nature of legal problems which firms attract that affects the amount of research performed, not one's position within the firm.

3.35 Differences by Age

Younger lawyers reported doing a greater amount of research than older lawyers — spending more hours per week and a greater percentage of their work week in research activities. Those lawyers under 30 do significantly more research than lawyers 40 years old or older.

3.36 Differences by Sex

Female lawyers reported spending more hours per week and a greater percentage of their work week in research activities than their male counterparts. Female lawyers made up 14% of the sample and reported spending an average of 6.1 hours per week doing legal research while male lawyers reported spending an average of 5.1 hours per week in research activities.

In terms of the percentage of work week, female lawyers reported spending 13% of their work week in research compared to 10.6 percent for male lawyers.

One explanation for this is that female lawyers reported that they pass the results on to other lawyers more than they use the results themselves. As well, a greater percentage of female lawyers reported research as their area of specialization.

3.4 USE OF PRINT INFORMATION SOURCES

3.41 Use of Specific Sources

Print information sources remain the dominant medium through which lawyers get information. Not surprisingly, eight of every ten lawyers in Ontario use print sources of information at least a few times every week.

The print information sources used by the greatest percentage of Ontario lawyers is *Ontario Reports*, followed by legal textbooks, *Statutes of Ontario* and the *Index to the Revised Statutes of Ontario*. Table 3-6 presents typical print information sources in rank order of usage.

Table 3-6
USE OF SPECIFIC PRINT INFORMATION SOURCES
(N = 751)

	Do not use %	Less than 1 hour %	1-3 hours %	4 or more hours %
Ontario Reports	9.4	49.0	33.0	8.3
Legal textbooks	12.8	52.9	25.1	9.2
Statutes of Ontario	18.3	51.6	22.3	7.9
Index to the Revised Statues of Ontario	39.3	52.5	6.5	1.7
Law journals	40.7	46.9	9.3	3.1
Statutes of Canada	41.7	48.3	6.9	3.1
Dominion Law Reports	43.1	43.6	10.9	2.4
Canadian Abridgment	47.2	42.9	8.3	1.4
Supreme Court Reports	55.2	39.2	4.8	.8
All Canada Weekly Summaries	59.4	38.2	2.3	.1
Canadian Current Law	62.9	33.5	3.2	.4
Ontario Appeal Cases	71.2	23.3	4.4	.8
Canadian Criminal Cases	75.4	15.1	6.2	3.4
English law reports	77.4	19.8	2.0	.8
Canadian Charter of Rights Annotated	77.8	18.3	3.5	.4
Federal Court Reports	80.2	15.7	3.5	.6
United States law reports	82.8	16.2	.8	.3
Weekly Criminal Bulletin	85.7	9.8	3.1	1.3
Dominion Report Service	86.2	12.0	1.5	.5
Dominion Tax Cases	86.8	9.6	1.6	2.0
National Reporter	88.2	10.1	.7	1.1
Canadian Patent Reporter	92.6	5.0	1.3	1.1
Canadian Regulatory Reporter	96.0	3.0	.8	.3
Other legal information sources	51.8	30.5	12.6	4.9

3.42 Evaluation of Print Sources

Ontario lawyers rate the print sources available to them as "average" to "good." On each of the fourteen attributes, the mean score was between 3 (average) and 4 (good) for the sample.

Relatively, the strongest characteristics of print sources are their usefulness, accessibility, and readability. Lawyers felt that the weakest characteristics of the print sources were the cost, their ease of use and the organization of information in these sources.

Table 3-7 presents lawyers' evaluation of print information sources they use in their practice of law.

Table 3-7
EVALUATION OF PRINT SOURCES OF LEGAL INFORMATION
(N = 751)

Rank	Very Poor %	Poor %	Average %	Good %	Excellent %
1. Useful	.1	1.3	24.5	58.5	15.6
2. Accessible	.3	3.6	26.7	54.1	15.4
3. Readable	.6	2.0	28.2	55.7	13.5
4. Accurate	.1	2.6	31.6	50.8	14.9
5. Reliable	.3	3.8	34.8	47.6	13.5
6. Relevant	.7	3.7	33.6	49.1	12.9
7. Amount of information	.1	3.6	41.3	45.8	9.2
8. Detail	.3	5.2	42.8	41.6	10.2
9. Convenient	1.1	7.1	39.2	43.2	9.4
10. Timely	1.4	9.0	43.6	38.5	7.5
11. Organization	1.1	9.3	43.3	39.6	6.7
12. Efficient	1.7	13.4	45.9	33.4	5.6
13. Easy to locate information	2.0	15.3	43.6	33.3	5.9
14. Cost	3.5	13.5	50.6	26.3	6.0

3.5 USE OF ONLINE INFORMATION SOURCES

One of the major purposes of the present study is to ascertain the extent to which lawyers are using online information sources in their legal research. In this section, the results of the survey for the use of online databases, the use of specific online information sources and an evaluation of online information sources are discussed. In

addition, for those lawyers who do not use online information sources, the reasons for not using online databases are examined.

3.51 Frequency of Online Use

While only four in ten lawyers in Ontario have access to online databases, only one in ten use these information sources at least once a week. When compared to use of print sources, online sources are used irregularly and infrequently by the vast majority of lawyers in the province.

Table 3-8 compares online use with print use among Ontario lawyers. While 35.6 percent of the lawyers in Ontario use print information sources every day, only one percent of these lawyers use online databases every day. And while over 80% of Ontario lawyers use print information sources at least once a week, only 9% of Ontario lawyers use online information sources at least once a week. It is clear that print information sources remain the dominant medium through which to seek legal information.

Table 3-8
ONLINE USE COMPARED TO PRINT USE
(N = 751)

Frequency of Use	Print %	Online %
Every day	35.6	1.3
A few times a week	47.0	4.4
Once a week	9.2	3.2
Once or twice a month	5.9	8.3
Less than once a month	1.5	16.8
Never	.8	66.0

3.52 Online Sources

As with print sources, respondents were asked to indicate which specific sources of information they used when online. Like print sources, the online source most used by lawyers in Ontario is *Ontario Reports Plus*, followed by *Supreme Court Reports*, *All Canada Weekly Summaries*, and the *Statutes of Ontario*.

Table 3-9
USE OF SPECIFIC ONLINE INFORMATION SOURCES
(Users Only, N = 255)

	Do not use	Less than 1 hour	1-2 hours	3 or more hours
Ontario Reports Plus	63.9	30.6	3.1	2.4
Supreme Court Reports	70.2	28.6	.8	.4
All Canada Weekly Summaries	71.0	26.6	2.0	.4
Statutes of Ontario	76.8	22.0	.8	.4
Ontario Appeal Cases	78.0	20.0	1.2	.8
INFOGLOBE	82.3	15.7	1.6	.4
LEXIS	82.7	14.1	1.6	1.6
Dominion Report Service	83.5	14.5	1.2	.8
WESTLAW	84.3	13.7	1.6	.4
Federal Court Reports	87.0	13.0	0.0	0.0
Statutory Orders and Regulations of Canada	87.8	11.0	.4	.8
National Reporter Service	88.6	10.6	.8	0.0
Canadian Criminal Cases	91.4	8.2	.4	0.0
Weekly Criminal Bulletin	91.4	8.2	.4	0.0
Dominion Law Reports	91.8	4.3	3.1	.8
Dominion Tax Cases	92.1	7.5	.4	0.0
Canadian Patent Reporter	92.7	6.7	.4	0.0
DIALOG	93.3	5.5	1.2	0.0
Canadian Regulatory Reporter	96.9	3.1	0.0	0.0
Other online legal information sources	76.5	19.2	2.7	1.6

3.53 Evaluation of Online Sources

Among the fourteen attributes which respondents evaluated, online sources were rated the highest for their timeliness, usefulness and accuracy. Like print sources, online databases received their lowest rating for their cost and ease of use (Table 3-10).

Table 3-10
EVALUATION OF ONLINE SOURCES OF LEGAL INFORMATION
(N = 255)

Rank	Very Poor %	Poor %	Average %	Good %	Excellent %
1. Timely	.1	3.5	25.9	43.3	26.8
2. Useful	2.0	7.0	32.8	42.8	15.4
3. Accurate	1.0	7.0	39.8	38.8	13.4
4. Relevant information	1.5	8.5	39.8	40.3	10.0
5. Accessible	2.0	15.9	31.3	37.3	13.4
6. Reliable	2.5	7.5	46.8	33.3	10.0
7. Amount of information	2.5	11.4	45.8	27.9	12.4
8. Convenient	3.5	16.4	35.3	31.3	13.4
9. Efficient	2.0	17.9	38.8	28.9	12.4
10. Readable	1.5	15.9	44.3	29.9	8.5
11. Organization	3.0	16.4	40.8	31.3	8.5
12. Detail	3.5	16.9	44.8	26.4	8.5
13. Easy to locate information	7.0	23.4	39.8	23.4	6.5
14. Cost	8.5	21.9	43.3	20.9	5.0

3.54 Effect of Online Usage on Work Performance

Lawyers who use online databases believe that the use of online databases has increased their awareness of available information and decreased the amount of time it takes them to find information. For a majority of these lawyers, the use of online databases has had no effect on the quantity of work done, their decision making ability, or the quality of their work (Table 3-11).

Table 3-11
EFFECTS OF ONLINE USE ON WORK PERFORMANCE
(Users Only, N=255)

	Significantly Decreased %	Decreased %	No Effect %	Increased %	Significantly Increased %
Quality of your work	0.0	1.4	49.1	44.8	4.7
Awareness of available information	0.0	.5	36.3	52.3	10.8
Decision-making ability	0.0	.5	65.6	28.8	4.7
Work confidence	0.0	.5	54.7	38.2	6.6
Quantity of work done	.5	4.7	67.0	23.6	3.8
Time taken to find information	9.0	34.9	40.6	14.2	1.4

3.55 Why More Lawyers Are Not Using Online Sources

As discussed earlier, only four in ten lawyers have access to online databases in their place of work. This result, after more than ten years of availability, would lead one to believe that online databases are useful to only a limited number of lawyers. To understand why more than six of every ten lawyers never uses this information source, we asked respondents why they did not use online databases. The reasons most often cited are summarized in Table 3-12.

Table 3-12
REASONS FOR NOT USING ONLINE DATABASES

Rank	Reason	%
1	Expensive, Cost, Not cost efficient	20.6
2	Not available	19.4
3	Do not require	11.5
4	Not trained to use it; unfamiliar	7.3
5	Someone else does online research	5.0

For one in five lawyers, cost was cited as the main reason for not using the medium.

3.6 SUMMARY

These results give us a description of the practice of legal research in 1987. They suggest that legal research remains a selected activity and is focused on solving specific problems. While most lawyers do a moderate amount of research, one in ten does very little or no research and 14% do a lot of research. On average, lawyers in Ontario spend about five hours a week doing legal research.

Print information sources remain the dominant form of information used by lawyers and their quality is considered "average" to "good."

Online databases are used primarily to update research done with traditional print media and are used regularly by only 5% of the lawyers in Ontario. Thirty-eight percent of the lawyers do not have access to online information technology.

In terms of other information technology in the law office, only word processing is used by a majority of lawyers. Less than half the

lawyers in the province use computerized accounting, electronic in-house retrieval systems, electronic mail and computerized billing.

PART II
EXPLAINING PATTERNS OF LEGAL RESEARCH

4. THEORETICAL MODEL

Professionals spend a large proportion of their work time communicating. It has been estimated that as much as seventy to eighty percent of their work day is spent in communication-related activities (Klemmer & Snyder, 1972; Mintzberg, 1973; Bair, 1979; Ruchinskas, 1982) in order to coordinate or control activities, to reduce uncertainty in performing tasks, to interpret the environment, to make decisions, and for socioemotional reasons (Galbraith, 1973; Arrow, 1974; Porter & Roberts, 1976; Farace, Monge and Russell, 1977; Weick, 1979). Of the variety of communication activities for which media are used, the present study focuses on **instrumental** use of media to acquire information; that is, we are interested here in the acquisition of information to solve a particular problem or to reduce uncertainty in one's work, and the use of media to acquire that information.

In this chapter, we (1) develop a model which explains differences in the amount of legal research, (2) examine the factors which explain the use of online databases in legal research, and (3) distinguish heavy and light information seekers by their use of print and online information. The objective is to uncover and explain the dimensions of information-seeking behaviour of lawyers in legal research.

4.1 FACTORS AFFECTING MEDIA USE BY PROFESSIONALS

Media use by professionals for instrumental information-seeking takes place in the context of organized work. In attempting to explain the differences in media use, some explanations suggest that information seeking is a function of the nature of one's task. Tasks with greater variety and with non-routine procedures have been found to increase uncertainty and the need for information (Perrow, 1967; Van de Ven and Koenig, 1974).

Other explanations have focused on the influence of organizational characteristics such as size and dispersion of workers and the need to coordinate and control information flow in the organization (Galbraith,1973; Tushman and Nadler, 1978). Within this perspective, direct access to sources of information is considered crucial to effective information processing.

Yet other explanations have suggested that media use is a function of media characteristics such as interactivity and social presence (Short *et al.*, 1976; Rice,1984; Trevino, Lengel and Daft, 1987). Differences in the use of the telephone, electronic mail and interpersonal media have been explained from this perspective.

Another approach suggests that differences in media use are explained by differences in individual characteristics and "social categories" of workers. Education, position within the organization, and attitudes toward the media have been shown to influence media use (Allen, 1977; Culnan, 1983).

Finally, some explanations have focused on the relations between people and social learning in attempting to explain media use in the organizational context. The social information processing perspective suggests that one learns acceptance of a particular medium from others in the organization and from communication with people outside the organization (Fulk *et al.*, 1987; Mick *et al.*, 1980).

In an attempt to understand the complex structure of media use in professional work, a synthesis of these approaches would be useful in the development of a more comprehensive theory of media use in legal research (Fulk *et al.*, 1987). The model developed here incorporates many of these variables, in addition to cost. The rationale for including each of these variables and the expected relationship between the variable and the research habits of lawyers is discussed below.

4.11 The Cost Of Information

The assessment of the total cost of media use in an organizational setting is complex. At least six different aspects of cost can be identified: (1) the time cost to the user, (2) the price of access, (3) overhead costs of information storage, (4) management costs associated with storage and retrieval of information, (5) learning costs associated with using media, and (6) the costs of formulating the search strategy for information acquisition. And, the total cost of media use is not simply the sum of these six costs because other costs (e.g., opportunity costs) must be included in any calculation of total cost.

The present study isolates two aspects of cost — the time cost to use the media and the cost of access to the information content of the media. These two costs have been isolated for inclusion in the model because it is believed that they represent a substantial portion of the cost of media use, and because measurement of these costs can be made with an acceptable degree of reliability.

Access Cost

The theory of demand suggests that as the price of a good or service increases, market demand for that product diminishes, *ceteris paribus*. Information products, while exhibiting public good characteristics, often have similar demand characteristics as private goods. The negative relationship between price and demand has been documented for newspapers (Rosse, 1978), scientific journals (Berg, 1971; Braunstein, 1977), library services (Casper, 1978), cable television (Babe, 1978; Webbink, 1986; DOC, 1986), and online searches in a library environment (Cooper and DeWath, 1977).

Beyond the simple negative relationship between price and quantity demanded, the **sensitivity** of demand to a change in price is an important demand characteristic. The price elasticity of demand is the sensitivity of demand relative to change in prices charged for a good or service. It has been found that in some cases, demand for information media is relatively insensitive to price changes over specific ranges of price. In their study of the pricing of library services and online searches done in the library, Cooper & DeWath (1977) found when fees were charged for services that were previously free, the invoicing improved the quality of the searches (i.e., less time spent searching), and that the number of searches dropped only by a little more than 10%. Casper (1978) found that the influence of price on the demand for library services depended on income. And, in a study of the demand for cable television services (DOC, 1986), the demand for basic cable was price-inelastic up to a monthly access charge of $12.00.

In addition to the general conclusion that cost and media use tend to be negatively related, it is likely that in some cases the demand for information is not sensitive to price, and therefore, no relationship between cost and media use would exist. While the present study is not an analysis of market demand, it will provide an insight into the effect of cost on lawyers' use of media in their work.

While demand studies of individual media are useful, the emergence of new media during the past twenty years has caused a change in the structure of information markets (Compaine, 1984). Compaine has suggested that information markets should be defined by the information content and not by the medium of delivery. If this description of the market is accurate, then the two media formats that deliver the same information content are substitutes for each other. It is useful to look at those factors which influence the use of two media to acquire the same information content to see if they are considered substitutes or complementary by the user. When comparing the use of two media to acquire information, it is the **relative** cost of access that is important. The results of previous research are of less value here. When the cost of two media have been compared, it has been in the area of mass media use, where the differences in the price of access are small. For business and organizational media, however, the relative cost of access can be substantial and is, therefore, likely to have implications for use.

Print and online delivery of legal information have different access cost structures for the user. Print products are subscribed to by the organization and the cost of subscription can be amortized over the case load of the entire firm; that is the total number of hours of access in a year. Because of this relationship, the access cost of print decreases as the amount of use increases. Given the same expenditure on print subscriptions, the access cost for any individual will be lower for individuals in large organizations than for individuals in small organizations. For online databases, the cost of access is charged with each search. Thus, the total cost of accessing information online increases at a constant rate as usage increases. While professional firms can theoretically pass on the costs of information searching to clients, they must still remain competitive, such that we would expect even large firms to be sensitive to rising access costs. It is expected that access cost will be negatively related to use.

As stated earlier, it is the relative cost that dictates which medium is less costly to access. As the price of print access increases to the point of being greater than online access, the motivation to use online information becomes greater, not accounting for learning costs and associated installation costs. For organizations which experience this change in relative costs, there is certainly motivation to invest in online information services. It is expected that the ratio of online

access costs to print access costs will be negatively related to the proportion of media use accounted for by the use of online services.

Use Cost

The largest single aspect of the cost of media use is the cost of one's time (King, Roderer and Olsen, 1983). Here, too, we would expect demand theory to hold. That is, those individuals with high time costs would spend less time using the media.

In one study of media use by professional researchers and engineers, Mick *et al.* (1980) found that while the respondents did have some understanding of the time taken to use media, few had a good understanding of the cost of media access and use. Unfortunately, the research literature to date has not incorporated the cost of one's time into models of media use for instrumental purposes.

For most professionals, time is an important commodity, and therefore, the efficient utilization of this time is important. We expect that lawyers would have a good understanding of their time costs because of the long-standing practice of billing clients by the hour.

We would expect (1) that the cost of one's time would be negatively related to the general amount of research, because others with lower time costs can perform these functions, and (2) that because online technology can reduce the time spent searching, the cost of one's time would be positively related to online usage as a percentage of media use.

4.12 Task Characteristics

Organizational theorists have long focused on the relationship between tasks and the need for task-related communication. Perrow (1967) differentiated routine from non-routine tasks in an examination of the information requirements resulting from tasks in organizations.Two other dimensions of tasks — amount and equivocality of information required — are related to uncertainty and have been shown to influence the need for information (Daft & Macintosh, 1981).

In the practice of law, we would expect that the amount and nature of information seeking would vary by the specific area of specialization. That is, lawyers who practice in such areas as constitutional law

or litigation may spend more time in legal research than lawyers who practice in areas such as real property. However, there is likely to be variation in the amount of information seeking and media use even within a certain area of law. It is believed that the task characteristics isolated in the current model enable us to account for variation across and within areas of specialization.

Task Variety

Task **variety** refers to the frequency of unexpected events that occur in the process of task completion and the repetitiveness of work processes. The more variable one's tasks are, the greater the need for information for non-routine decisions (Van de Ven & Delbecq,1974). On the other hand, if one's tasks have little variety, one can be considered to be more specialized and, presumably, would have more complete knowledge of the particular task; thus, there is a reduction in the information requirements of the task. It is expected that task variability is positively associated with the general amount of research activity. In addition, task variability is expected to be positively related to the relative use of online to print media because online technology enables access to multiple databases at one time, saving the individual time taken to search multiple sources manually.

Task Equivocality

Equivocality refers to the clarity of the meaning of information. In a task environment that is rapidly changing and complex, there is often a greater need to reduce uncertainty and thus, a greater need to seek-out information. Results of preliminary studies on the effect of task equivocality have been mixed. Daft & Macintosh (1981) found that the more uncertain the meaning of information processed during the course of one's work, the less amount of information one is able to process, reducing the overall level of media use. On the other hand, in highly uncertain environments, the need for information is greater than in more stable environments (Weick, 1979). We would expect that task equivocality would have an influence on information seeking, but the direction of this relationship remains an open question. Because online delivery of information allows access to the most up-to-date information and often this information is highly valued in uncertain environments, we would expect that task equivocality would be positively related to the proportion of online usage.

Amount of Information

Amount of information refers to the frequency and intensity of information inputs. The amount of information required is a characteristic of one's task and one's style of information seeking. While certain tasks require more information than others, there are likely to be individual differences in information-seeking. Some individuals seek early closure in information-seeking, while others search all relevant information before making a decision. The amount of information an individual requires should be positively related to general media use. In addition, people who report using a lot of information in their work also tend to be people who search many sources for all available information before making a decision (Daft and Macintosh, 1981). For this reason we would expect the "amount" of information an individual requires to be positively related to the relative use of these two media.

Information Use

The final task-related variable to be included in the model is the use of the information. In cases where the result of the information-seeking process is "output" to be passed on to others for use in their work as opposed to using the information acquired as an input into one's own decision-making, the individual is likely to spend a greater percentage of work time seeking information. Thus, individuals for whom information seeking is a process of producing **output** for others more often than using the information themselves are more likely to spend a greater percentage of their time doing research. Additionally, because these producers of information would tend to use multiple information channels available to them we would expect information output to be positively related to the relative use of online information systems.

4.13 Organizational and Environmental Variables

The options available to an individual when seeking access to information are influenced by organizational and environmental conditions. Specifically, the organization and the information environment are likely to determine the resources available for information seeking by either constraining or supporting access to information media. The purpose of the organization and the nature of the environment also influence the amount of information needed (Weick, 1979). The primary organizational and environmental variables of interest in the present study are the type of practice, the availability and proximity

of information media and whether one's work is in an urban or rural environment.

Type of Practice

The type of practice is one indication of the resources available to support information-seeking behaviour and the need to acquire information is the type of practice. Lawyers in private law practice are able to pass on the cost of information acquisition to clients, suggesting the presence of fewer resource constraints on information seeking than for lawyers working in government, industry, or public interest practice. In addition, private law practice is a more turbulent environment in terms of legal information and lawyers in private practice are more likely to be involved in work that requires legal research on a regular basis (DOJ, 1980). Specifically, we would expect those in private practice to do more research than those lawyers in government or industry. However, it is not clear that the type of practice should be related to the relative use of online media.

Media Access

A critical variable in the use of information is access to the delivery system. Access to sources of information is considered to be a necessary, but not sufficient, condition for usage (Edwards, 1977; Kerr & Hiltz, 1982; Hiltz & Turroff, 1978; Johnsen et al., 1979; Steinfield, 1985). Most law offices have a library on site and most lawyers carry out their legal research in their offices (DOJ, 1980). Because basic access to legal information is available to virtually all lawyers, access is not expected to influence the general amount of information seeking.

However, the presence of a terminal, and the proximity of the terminal, or ease of access, is critical to the use of online information media. For example, Uhlig and Bair (1979) and Steinfield (1985) recommended providing users with their own terminals in their workspace to ensure usage of electronic mail systems. If one has to travel great distances to access information, there is not only a greater cost involved, but more inconvenience. Access and the proximity of the terminal should be positively related to the proportion of online usage.

Urban Environment

Whether one practices law in an urban or rural environment is indicative of the number of information sources available to them.

Because urban areas have a higher percentage of complex legal problems (DOJ, 1980), we expect lawyers in an urban environment to spend more time doing legal research. However, because online delivery of information allows those in a rural environment to compensate for fewer information sources, we expect that an urban information environment would be negatively related to the relative use of online databases.

4.14 Individual Characteristics

A class of variables that has been shown to affect communication patterns represents the role of the individual within the organization and the background characteristics of the individual. Prior research has demonstrated the importance of both role and background on the use of communication channels (Mick *et al.*, 1980; Culnan, 1984; Fulk *et al.*, 1987). In one study of time spent using various media, individual role variables were among the most influential predictors (Ruchinskas, 1982).

Most studies of the use of information media have included individual demographic variables in their analyses. However, demographic variables seldom explain large proportions of differences in information seeking. We are interested only in those demographic variables which are theoretically interesting and relate directly to the instrumental use of information in professional work. While many demographic variables are correlated with other variables in the model, the theoretical relationship is not between the social category and media use, but rather between the task, or organizational variable and media use. For example, while one's age is highly correlated with the number of years in the practice of law, it is the socialization in the profession and experience in law that is expected to have an influence on one's information-seeking behaviour, rather than age *per se*. Thus, in this study, age, income, and education are not incorporated into the model for theoretical reasons. Those individual characteristics of importance to the present study are length of time in the profession, one's communication roles, one's perception of media utility, and one's innovativeness.

Length of Time in the Profession

The relationship between the number of years an individual has been a lawyer and the amount of legal research is expected to be negative for three reasons. First, the longer one practices law, the more one is

able to learn "short cuts" to laborious legal research. Second, because law is cumulative, we would expect lawyers with many years of practice to have less need to do extensive research, because of their accumulated knowledge. Finally, and perhaps, most important, the training and socialization processes in the profession encourage the delegation of research functions to less experienced junior associates. Thus, we would expect the number of years in the profession to be negatively related to the amount of information seeking, generally.

It is also expected that the length of time in the profession would be negatively related to the relative use of online information technology. There are two reasons for this relationship. First, previous experience with information media can serve as reinforcement of previous behaviour. Lawyers who have been practicing over many years have less, if any, exposure to the newer information technology, while they have many years experience with print media. Secondly, the traditionally conservative orientation of the legal profession would support the "preference for books and [their] general respect for the current system of researching the law." [1]

Communication Roles

There are many "communication" roles one may play in an organizational environment. These roles involve information exchange with others outside the organization and information exchange within the organization. Thus, the roles are expected to complement information seeking, in some cases, and in other cases act as a substitute for active information seeking. Two communication roles of particular interest in the present study are one's gatekeeping activity and one's external boundary spanning activity.

In the context of the practice of law, the extent to which an individual is a gatekeeper (an internal source of information for others in the firm) should be positively related to information-seeking behaviour. The more one is seen as a source of information by other lawyers in the firm, the more one is likely to remain "current" in the law,

1 Philip Slayton, *Electronic Legal Retrieval*, Ottawa: Department of Communications, 1974, p. 15.

suggesting a motivation to do research. We would expect gatekeeping to be positively related to media use generally.

Boundary spanning activity, the extent to which one is a source of information or seeks information outside the professional organization, represents a behaviour that could substitute for a certain amount of information seeking, but could also supply motivation for "keeping up-to-date." Because of these influences in opposite directions, it is unclear how boundary spanning affects the general level of information seeking.

The relationship between these communication roles and the relative use of online technology, however, is expected to be positive in both cases. Research on the adoption of innovations suggests that these roles are indicators of one's opinion leadership and cosmopoliteness in the organizational system and should be positively related to the adoption of new technology (Rogers, 1983; Barnett, 1985).

Perceptions of Media Utility

Information media have both objective characteristics, such as cost and timeliness of delivery, as well as characteristics perceived by the user. Several characteristics have been studied in the past, including utility, accessibility, convenience, and ease of use. Many studies have documented the positive relationship between these attributes, generally associated with perceived utility, and the use of various channels (Fett, 1975; McEwen & Hempel, 1977; McEwen, 1978; Ruchinskas, 1982; Blood, 1983; Jahoda, Bayer & Needham, 1978; Hart and Rice, 1986). It is expected that perceived utility of information media will be positively associated with information media use.

Innovativeness

While innovativeness is not expected to be related to information seeking *per se*, the adoption of a new research technology — in this case, the use of online databases — is expected to be positively related to innovativeness. Those individuals who use other computer-based information technology in their work are more likely to use online databases because of the lower learning costs associated with using a newer medium. Innovativeness should be positively related to the relative use of online information.

4.2 SYSTEMATIC VARIATION IN INFORMATION MEDIA USE

It has been suggested here that instrumental information seeking can be viewed as a complex behaviour. Moreover, assuming that instrumental media use is a regular part of one's work, it is quite likely that "types" of use exist that are representative of relatively stable patterns of use.

Assuming that professionals can be categorized by their relative use of print and online media in their research, and that these categories are mutually exclusive, four groups of media users can be identified for further study — (1) high users of both media, (2) high users of print and low users of online, (3) low users of print and high users of online, and (4) low users of both media. This four-group characterization enables us to examine the structure of information media use. Having identified those variables that are likely to influence media use generally, and the use of online technology, it is expected that the four groups differ on these variables. If so, this result would suggest that there is systematic variation in the use of media for instrumental information seeking in professional work and that this systematic variation can be explained.

Specifically, the instrumental use of media will vary according to one's information need, one's autonomy, and one's cost sensitivity. First, it is expected that one's information "need" will be influenced most by task-related and organizational variables, and that "need" should help us differentiate those individuals who use both media frequently from those who use neither medium frequently, with individuals who report high relative use of only one medium being rated as "moderate" on this dimension.

Second, information seeking will vary according to one's "autonomy" or control over the content and nature of one's information environment and work (Spenner, 1983). Variables that will contribute to one's autonomy are experience with electronic media, private practice, and task variability. It is expected that autonomy will separate those who report a higher than average use of online media and a lower than average use of print media from those who use print media predominantly.

Finally, media use for information seeking will vary according to one's cost sensitivity. Higher costs associated with the use of the media should lead to the choice of using one medium over another rather than using multiple media. We would expect those who use either print or online information, but not both, with high relative frequency, to be more sensitive to costs than individuals who use both media in a complementary way.

4.3 SUMMARY

In summary, the purpose of the present study is to (a) identify the relationship between cost and media use for instrumental information seeking when other task, organizational, and individual factors are taken into account, (b) explain the relative use of online information technology in information seeking, and (c) explain systematic variation in the use of print and online media for information seeking by lawyers. The specific research questions and hypotheses can be summarized accordingly.

Research Question #1: What are the significant factors affecting instrumental information seeking by lawyers?

H1: The following variables are expected to be negatively related to the amount of information seeking in one's work:

- Time Cost of Use
- Length of Time in Profession

H2: The following variables are expected to be positively related to the amount of information seeking:

- Information Use — Output
- Task Variability
- Amount of Information
- Private Practice
- Perceptions of Print Utility
- Gatekeeping Activity
- Urban Information Environment

Research Question #2: What are the significant factors affecting the relative use of online information among lawyers?

H3: The following variables will be negatively related to the proportion of media use accounted for by online information:

- Relative Access Cost
- Length of Time in the Profession
- Urban Information Environment

H4: The following variables will be positively related to the proportion of media use accounted for by online information:

- Access
- Time Cost of Use
- Task Variability
- Information Equivocality
- Amount of Information
- Information Use — Output
- Gatekeeping Activity
- Boundary Spanning Activity
- Innovativeness

Research Question #3: (a) What are the differences between individuals who use media in a complementary fashion and individuals for whom the media are substitutes, and (b) Can systematic variation in media use for seeking information in professional work be identified and explained?

H5: Explanatory variables can be combined in such a way that three functions can be derived to explain variation in media use. The first function will be associated with variables that identify the degree of information **need**. The second function will be associated with one's degree of **autonomy**. The third function will be characterized by one's **cost sensitivity** and be associated with the cost of using the media and relative cost of access.

H6: The four user groups will be separated in discriminant space on at least one dimension, and the group centroids will be located in discriminant space in the following way:

(a) Complementary Media Users (high print, high online): This group will be highest on level of need for information, and will be moderate on the autonomy and cost sensitivity functions.

(b) Online Users (low print, high online): This group will be high on the autonomy **and** cost sensitivity functions, and moderate on the level of information need.

(c) Print Users (high print, low online) Like the online users, this group is characterized by a high degree of cost sensitivity. However, this group is low on autonomy and moderate on information need.

(d) Non-Users (low print, low online). This group will have low information needs, moderate sensitivity to costs and moderate autonomy.

5. METHODOLOGY

The study was conducted as a field survey in the summer and fall of 1987. In this chapter, the sampling procedure, the measurement of variables and data analysis procedures are discussed.

5.1 SURVEY METHODOLOGY

The population under study is that of lawyers. The unit of analysis is the individual lawyer, rather than the firm. A systematic random sample of 2,000 lawyers in Ontario was drawn from the *Canadian Law List, 1987*.

The survey instrument was pre-tested in late June and early July, 1987. After revisions based on the pre-test, data were collected during August and September, 1987. A self-administered questionnaire was mailed, along with two follow-up letters to nonrespondents, at two-week intervals. A total of three mailings were used in the gathering of data, with those who had responded removed from the mailing list at each stage. Of the 2,000 lawyers in the original sample, 97 questionnaires were returned as "undeliverable" by the post office or by individuals who reported that they were "not currently in practice," or "retired." Of the net sample (1,903), 751 completed questionnaires were returned, representing an effective response rate of 39.5%. While one would hope to achieve a higher response rate in a field survey, this response rate is above average for surveys among lawyers and other professionals.

The survey instrument, which appears in Appendix I, was composed of thirty-nine questions, including three open-ended questions. None of the open-ended questions was used in the present analysis.

The demographic characteristics of the sample are presented in Table 5-1.

Table 5-1
DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS
(N = 751)

DEMOGRAPHIC CHARACTERISTIC	SAMPLE (%)
Sex	
Female	17.6
Male	82.4
Age	
Under 30	11.8
30 - 34	26.0
35 - 39	23.3
40 - 44	16.9
45 - 49	8.0
50 - 54	4.9
55 - 59	4.5
60 or older	4.6
Income	
less than $ 25,000	3.2
$ 25,000 - $ 39,999	22.5
$ 40,000 - $ 54,999	16.6
$ 55,000 - $ 69,999	16.8
$ 70,000 - $ 84,999	11.2
$ 85,000 - $ 99,999	6.9
$100,000 - $114,999	5.7
$115,000 - $129,999	2.6
$130,000 - $145,999	2.1
$145,000 - $159,999	2.1
$160,000 or more	10.3
Type of Practice	
Private practice	83.7
Government	10.6
Corporation or Private Industry	1.2
Public service (legal clinic)	1.6
Other	2.8
Size of Firm	
One (sole practitioners)	16.1
2 - 5	33.5
6 - 9	11.3
10 - 24	14.0
25 - 49	6.8
50 or more	18.2

5.2 MEASURES

5.21 Dependent Variables

The dependent variable, information seeking, takes three forms in the following analyses: (1) the amount of legal research performed, (2) the relative amount of use of online and print information media, and (3) categories of use based on the relative usage of these two media.

Amount of Legal Research

Each respondent was asked to estimate both the number of hours per week (M = 5.2; S.D. = 5.2) and the percentage of work time spent searching for information (M = 10.9; S.D. = 11.7). The two measures are extremely highly correlated ($r = .94$; $p < .001$). We use the number of hours per week doing legal research in our later analyses. The distribution of responses on the variable was positively skewed (2.33). Twelve cases were outliers, with respondents spending 25 or more hours per week doing research. These twelve cases were recoded to 20 hours per week. Then, 1 was added to each response and the natural logarithm of number of hours per week spent doing research was calculated. This transformed variable has a normal distribution (M = 1.55; S.D. = .70).

Relative Use of Print and Online Information

The second research question is an attempt to explain the relative use of online information technology. The form of the dependent variable in this case is the ratio of the number of hours each week spent using online databases to the number of hours each week spent using print information sources. To counter zeroes in either the numerator or the denominator, 1 was added to both the number of hours of online use and the number of hours of print use. The mean for the ratio of online use to print use was .40 (S.D. = .38). The variable was transformed by calculating the natural logarithm, which resulted in a more normal distribution (M = -1.21; S.D. = .76).

Amount of Online Usage by Previous Adopters

Sixty-six percent of the sample never uses online information technology. Use of online by the remaining thirty-four percent of the sample ranges from less than once a month to every day. One aspect of the analysis of online usage is to examine reasons for variation among previous adopters. Thus, non-users were eliminated, and for

adopters of online technology (N = 255), the hours per week spent using online was the form of the dependent variable. The distribution of this variable was bimodal. Forty-five percent of previous adopters use online databases less than one hour a week, while the remaining fifty-five percent use online databases more than one hour per week. Because of the bimodal distribution, the cases were recoded into "high" users of online if they used online one or more hours per week (N = 116) and "low" users of online if they used online databases less than an hour per week (N = 138). The mean for the hours of online use by previous adopters is .54 (S.D. = .50).

Categories of Media Use

In order to examine the differences between heavy and light users of the two information media, respondents were categorized into four user groups based on the relative frequency of use of both print and online information sources. As a result of the distribution of the frequency variables discussed above, and using the median as a breaking point, the four groups were developed as shown in Table 5-2.

Table 5-2
USER GROUPS OF PRINT AND ONLINE LEGAL INFORMATION

		ONLINE: Low (Do Not Use)	ONLINE: High (Use)	
PRINT: Low (3 Hours Per Week Or Less)		N = 338 (45.1%)	N = 148 (19.8%)	486 (64.9%)
PRINT: High (More Than 3 Hours Per Week)		N = 156 (20.8%)	N = 107 (14.3%)	263 (35.1%)
		494 (65.9%)	255 (34.1%)	749 (100%)

Chi-square = 61.4; d.f. = 1; p < .001.

The largest group (N = 338) is composed of those who do not use online databases and use print sources three hours a week or less, i.e., this group is composed of lawyers who are low users of both media. The smallest group, as expected (N = 107), is composed of those lawyers who use print media more than three hours a week and also use online information; members of this group are high users of both media.

5.22 Independent Variables

The primary media variable of interest in the present study is the cost of information. Each medium has a cost associated with access, and a cost to lawyers for the time spent using the medium.

Access Cost

As discussed in the previous chapter, the cost structure of the two media are different, primarily because the cost of print can be amortized over the life of the book and the number of lawyers in the firm. The measure of cost that was derived for each respondent is the average hourly cost of access to the two information media. The relevant subscription price and connect hour prices were obtained from 1987 producer price lists. The cost of print access was calculated as:

$C_p = S/(L \times R)$

where:

C_p = average hourly cost of print use
S = Subscription price per year
L = Number of lawyers in the firm
R = Average number of hours of print research per lawyer

The mean cost of print access is $24.80 (S.D. = 29.8) per hour.

All legal databases for Ontario were housed on a single system (QL Systems) until the summer of 1987. Because of the variation in pricing, the access cost for online information sources was calculated as a constant — $75.00 per hour. Because we are interested in the relative use of these two information media, a ratio measure of the cost of access was obtained. The ratio of the hourly cost of online access to the hourly cost of print access was calculated (M = 19.4;

S.D. = 26.0). For eighty-four percent of the sample, the cost of online access is greater than the cost of print access.

Use Cost

The time cost of using each medium was calculated as the hourly rate of a lawyer's time. Hourly rate was not applicable to government workers and lawyers in private industry. A regression equation (Hourly Rate = 76.2 + .0075 Income) was used to impute the hourly rate for these lawyers from their annual income.

Two points relating to these measures of cost are worth noting here. First, it should be remembered that there are other costs associated with both print products and online information services that are not included in these measures. These costs include library space and storage, library management costs, terminal costs, learning costs for the new medium, and telecommunication costs while online. These additional costs can have a significant influence on media use. However, we are interested here in cost measures which can be reliably obtained from individuals in a mail survey. Second, while variation in the amount invested in a firm's library is expected, the measure of print access costs used here provides a reasonably good estimate of the hourly access cost. A better measure could be obtained if we had more detailed information about firm expenditures on print information resources.

Task Variables

There are three task characteristics which have been shown to affect the use of information media in organizations and were measured in the current study: task variability, amount of information used, and equivocality of information. Additionally, a measure of the extent to which information is primarily an input into further decisions or the final output of one's work was obtained.

Task **variability** was measured by the number of areas of specialization which a lawyer practiced. Respondents were asked to identify areas of practice that occupied more than ten percent of their time during the past year. Lawyers who identified only one area (i.e., 100% of their time was devoted to this area of the law) were considered to be more specialized than lawyers who identified more than one area. The range for this measure was 1 - 3 (M = 2.4; S.D. = .82).

Task **equivocality**, the degree to which one perceives information used in one's work as being clear and easily understood, was measured as the sum of scores on three items, rated on a five point scale, where 1 = never and 5 = always (adapted from Daft and Macintosh, 1981). The items were:

a. I use information that can be interpreted in several ways and lead to different but acceptable solutions.

b. There is more than one satisfactory solution for problems in my work.

c. The information I use in making a decision could mean different things to different people.

Overall, respondents reported a moderate level of equivocality in the information they use in their practice (M = 9.4; S.D. = 2.2). The overall reliability of this measure (Cronbach's alpha) is .81.

The **amount of information** which one deals with in the practice of law was measured as the sum of scores on four items, each measured on a five-point scale (1 = never, 5 = always). The items were:

a. I keep gathering data until an excellent solution emerges.

b. I wait until all relevant information is examined before deciding something.

c. I go over all available information until the best solution appears.

d. I gather all possible information before making a final decision.

The mean for this item was 13.8 (S.D. = 3.0). Cronbach's alpha for this index is .80.

A measure of **information use** was developed from two items that asked respondents the frequency, on a five-point scale, of what the respondent does with the results of legal research:

a. I use the results directly myself.

b. I pass the results on to other lawyers.

Because we are interested in relative frequency of these two uses of information, a ratio of item b. to item a. was calculated. This measure, then, is the ratio of the amount of information seeking performed for others (information use as output of one's work) to the amount of information use as input into one's own decision-making. As expected, most lawyers seek information for their own use more often than they seek information for the use of other lawyers. The mean for this measure is .67 (S.D. = .30).

Organizational and Environmental Variables

The primary organizational and environmental variables of interest in the present study are the type of practice, media access, and one's information environment.

The **type of practice** was measured using the following categories: (1) private practice, (2) government, (3) corporation or industry, (4) public service, (5) other. Because we are interested in differences between lawyers in private practice and the other categories, a dummy variable was created where 1 = private practice and 0 = otherwise. Eighty-three percent of the sample worked in private practice (M = .84, S.D. = .37).

Media access was measured for both print media and online databases. Respondents indicated whether there was a law library and terminal access on site at the law office. Media presence was measured from 0 (not present) to 1 (present). Ninety-four percent of the respondents had a law library on site (print media presence), while only thirty-eight percent reported having online access at their place of work.

Because previous research suggests that it is not only the presence of media, but the **proximity** of media which promotes use, a measure of distance between the individual's work area and the location of both the library and terminal to access online databases was obtained. A score of 7 was assigned if the medium (library or terminal) was located in one's personal office, and a score of 2 was assigned if the medium was located in a different building, with intermediate scores for distances within this range. As expected from the measure of media presence, the location of print media is generally closer to one's work space than the location of online media. For print media, the mean of this proximity measure is 4.8 (S.D. = 1.4), while the

mean for the proximity of online information access is 2.4 (S.D. = 1.9).

Respondents were also asked to indicate where their location of practice was. Practices located in cities with a population greater than 250,000 were considered to be located in urban environments and coded as 1 (N = 496), while all others were considered to be working in a rural environment and coded as 0 (N = 245).

Individual Characteristics

The **length of time in the profession**, in years, was derived by subtracting the year in which the individual was called to the bar from 1987 (M = 11.2; S.D. = 10.0).

To measure one's organizational communication role as **gatekeeper** and one's **boundary spanning activity**, each respondent was asked to indicate the frequency of the following communication patterns using a five point scale, ranging from "less than once a month" (1) to "every day" (5), adapted from Culnan (1983). The items were:

a. How often do you recommend work-related information sources to other lawyers in your firm or department?

b. How often do other lawyers in your firm or department seek work-related information or advice from you?

c. How often do you seek work-related information or advice from lawyers outside your firm or department?

d. How often do others lawyers outside your firm seek work-related information from you?

Gatekeeping, a measure of one's role as a source of information in the organization, is the sum of items a. and b. above, with a minimum score of 0 (not applicable) and a maximum score of 10 (M = 5.2; S.D = 2.6). The overall reliability of this measure (Cronbach's alpha) is .82.

One's boundary spanning activity, the exchange of information outside the organization, is the sum of responses to items c. and d. above, with a range from two to ten (M = 4.3; S.D. = 1.9). The reliability of the boundary spanning measure is .60. The reliability of this measure

is relatively low and warrants the use of caution in interpreting results for this variable.

To assess the individual's **perceptions of the utility of information media**, a list of attributes (adapted from Gallagher, 1974) was provided and respondents were asked to rate the media on a five-point scale, from "very poor" (1) to "excellent" (5). The attributes were: timeliness, usefulness, accessibility, readability, organization, efficiency, convenience, reliability, ease of use, relevance, accuracy, detail, and amount of information. Because a pretest of the instrument suggested that non-users had difficulty rating online information sources, respondents were only asked this question for media with which they had experience. Thus, all respondents rated print information sources, and only users of online databases rated online information sources. A factor analysis of the fourteen items using responses for print utility discovered three underlying factors. Together, the three factors explained 80% of the variance. The results of the factor analysis are presented in Table 5-3. Factor scores were created for each of the factors. An index of the three factor scores was used as a measure of print utility. The overall reliability of this measure (Cronbach's Alpha) is .85.

Finally, a measure of **innovativeness** was developed for analysis of the use of online information. This measure is the number of communication technologies used in the automation of the law office. Respondents were asked to indicate whether each of the following was "used" (2), "not used" (1), or "not available" (0) in their law office: dictaphone, computerized accounting, computerized billing, computerized calendar control, word processing, electronic in-house retrieval systems, and electronic mail. After examining inter-item correlations, the "dictaphone" item was dropped. Innovativeness was measured as the sum of scores on the six computer-based items, with a range from zero to twelve (M = 6.14; S.D. = 3.36). The overall reliability of this measure is .78.

Descriptive statistics for all variables are provided in Table 5-4.

Table 5-3
FACTOR ANALYSIS FOR PERCEIVED UTILITY OF PRINT INFORMATION SOURCES

Attribute	Mean	S.D.	Factor 1 Format	Factor 2 Quality	Factor 3 Ease of Use
Efficient	3.28	.82	.80*	.21	.24
Organization	3.41	.79	.71*	.26	.27
Easy to Locate Information	3.23	.86	.70*	.29	.22
Convenient	3.53	.80	.59*	.25	.37
Timely	3.42	.81	.34	.21	.31
Accurate	3.78	.73	.22	.75*	.30
Detail	3.56	.75	.21	.73*	.21
Relevant	3.96	.76	.28	.62*	.37
Amount of Information	3.60	.71	.28	.60*	.28
Reliable	3.70	.76	.39	.49	.40
Accessible	3.81	.74	.34	.25	.66*
Useful	3.88	.67	.22	.39	.64*
Readable	3.79	.71	.35	.35	.63*
Percent of Total Variance Explained			.29	.29	.22
Correlation of Factors				.63 ($p < .001$)	.70 ($p < .001$)
					.63 ($p < .001$)

Note: Principal axis factor analysis using communality estimates on the diagonal. Number of factors determined by using a cut-off eigenvalue of 1.0. Three-factor solution explained 80 percent of total variance. Table entries are orthogonal, varimax rotated factor loadings. Asterisks (*) denote variables defining each factor as a result of high relative factor loadings. Because the items are all believed to be related, an orthogonal rotation is not the most appropriate form of factor analysis. One would expect a lower correlation among factors using an oblique rotation. An oblique rotation of the factors, however, resulted in a lower reliability estimate for the index. Thus, the three factors from the orthogonal rotation were used.

Table 5-4
SUMMARY STATISTICS FOR VARIABLES AND INDICES

Variable Name	Cronbach's Alpha	Mean	S.D.	Range	N
Media Cost Characteristics					
Online/Print Access Cost		19.42	25.95	.85-70.38	737
Use Cost		132.99	43.66	40-325	601
Task Variables					
Task Variability		2.40	.82	1-3	740
Information Equivocality	.81	9.36	2.15	3-15	674
Information Amount	.80	13.76	3.02	4-20	674
Relative Use—Output		.67	.30	.2-2.5	718
Organizational /Environmental Variables					
Type of Practice		.84	.37	0-1	743
Library Presence		.94	.24	0-1	751
Terminal Presence		.38	.49	0-1	751
Library Proximity		4.81	1.39	1-7	751
Terminal Proximity		2.41	1.92	1-7	742
Urban Environment		.67	.47	0-1	741
Individual Characteristics					
Length of Time in Profession		11.20	9.97	1-58	728
Gatekeeping	.82	5.19	2.60	0-10	733
Boundary Spanning	.60	4.26	1.88	2-10	733
Innovativeness	.78	6.04	3.36	0-12	745
Perception of Print Utility	.85	-0.26	5.40	-19-13	705
Perception of Online Utility*		3.35	1.27	1-5	226
Dependent Variables					
Log of Research Hours/Week		1.55	.70	0-3.04	745
Log (Online Hrs./Print Hrs.)		-1.21	.76	-3.3-1.4	733
Hours of Online Use*		.54	.50	0-1	255

* These measures were obtained for previous adopters of online technology only.

5.3 DATA ANALYSIS

The first research question focuses on the factors which affect the amount of information seeking in the practice of law. To address this question, regression analysis was used. To address the relative use of print and online media, a linear regression model was tested. In addition, a separate analysis of the amount of use of online information media by previous adopters was performed using logistic regression analysis.

Canonical discriminant analysis was employed to address the third research question, assessing the differences between groups of users. Respondents were divided into four groups based on their use of the two media in legal research — high users of both media, high users of print and low users of online, high users of online and low users of print, and low users of both media.

Canonical discriminant analysis provides a multivariate technique that examines differences between groups on all discriminating variables simultaneously. The procedure maximizes between-group separation relative to the dispersion of data within groups, performing a multivariate analysis of variance test for differences between group means on orthogonal dimensions (Klecka, 1980). The linear discriminant functions provide a basis to interpret the unique contribution of each variable to the explanation of group differences.

It is expected that there is systematic variation in the relative use of these two media and that this systematic variation can be explained by one's **need** for information, one's **autonomy** in one's work, and one's **cost sensitivity**. An examination of the discriminant functions and the correlation of discriminating variables with each function will suggest whether this expectation is satisfied. Then, a plot of the groups in discriminant space will be used to assess the potential for the discriminant model to predict the category of an observation as a function of its values on the set of independent variables.

6. EXPLAINING RESEARCH PATTERNS

6.1 AMOUNT OF RESEARCH

As a preliminary step in analyzing the relative use of online and print information media and the media user groups, an analysis of the general amount of information seeking was performed. Information seeking was operationalized as the number of hours of legal research performed each week. Twelve outliers were recoded to 20 hours and the natural logarithm of research hours per week was the dependent variable for this analysis. The results of the OLS regression model are reported in Table 6-1. The model accounted for 24% of the variance.

6.11 Cost

As discussed earlier, the cost of one's time while using media is often the most substantial portion of the total cost of instrumental information seeking. In this respect, the most relevant cost measure which should be associated with general media usage is the cost of one's time. Thus, cost in this portion of the analysis was measured as one's hourly billing rate. As predicted, the cost of using information media is negatively related to the amount of information seeking performed ($B = -.002$; $p < .05$). Lawyers with higher time costs spend less time seeking information each week than lawyers with lower time costs.

6.12 Task Characteristics

It was predicted that one's task characteristics would have a positive influence on information seeking. Specifically, the uncertainty of the information one deals with in one's work (information equivocality) was expected to lead to a greater amount of information seeking behaviour. This relationship is supported by the model ($B = .07$; $p < .05$). In addition, it was predicted that the more often one passes the information gathered on to other lawyers, the greater the amount of information seeking. This relationship, too, is supported by the model ($B = .19$; $p < .05$). Finally, information amount is positively related to the amount of information seeking, as predicted ($B = .16$; $p < .001$).

Table 6-1
REGRESSION ANALYSIS OF INFORMATION SEEKING
(N = 497)

Variable	r	Parameter Estimate (B)	Standard Error
Dependent Variable: Log (Research Hours Per Week)			
Intercept		.66*	.27
Media Characteristics			
Use Cost	-.14**	-.002*	.001
Task Characteristics			
Task Variability	-.03	.04	.04
Information Equivocality	.17**	.07*	.03
Amount of Information	.18**	.16***	.04
Information Use — Output	.24**	.19*	.09
Organizational Variables			
Urban Info. Environment	.11**	.15**	.06
Private Practice	-.19*	-.26	.17
Individual Characteristics			
Years in Profession	-.24**	-.01***	.003
Gatekeeping Activity	.27**	.05***	.01
Boundary Spanning	.16**	.03*	.02
Print Media Utility	.07	.01	.01

Note: * $p < .05$
** $p < .01$
*** $p < .001$

Entries are unstandardized parameter estimates (B). $R^2 = .24$

One surprising result is that the variability of one's task is not related to the amount of information sought ($p > .15$). One explanation is that the more variable the information that one deals with in one's practice of law, the less time there is to seek information. However, if this explanation were correct, we would, using similar reasoning, expect a negative relationship between amount of information one processes and information seeking, which is not supported by the data. A more plausible explanation is that certain areas of law, such as real property, are highly varied but require very little research when compared to other areas of law (DOJ, 1980). This explanation is supported by the data. Lawyers who practice in the area of real property spend less time doing legal research ($t = 7.51$; $p < .001$) and report having a higher level of task variability ($t = -11.60$; $p < .001$)

than other lawyers in the sample. Thirty-eight percent of the sample practice in the area of real property as the primary, secondary or tertiary areas of their practice. Thus, increased variability, as measured here, would not necessarily lead to a greater amount of legal research.

6.13 Organizational Variables

As predicted, a positive relationship was found between an urban location and the amount of legal research ($B = .15$; $p < .01$), suggesting that lawyers in urban areas have greater information needs than lawyers in a rural environment. However, it was also predicted that lawyers in private practice would spend more time in research than lawyers in industry and government. However, this hypothesis is not supported by the model ($p > .15$).

6.14 Individual Characteristics

As predicted, the number of years one has been in the profession is negatively related to information seeking ($B = -.01$; $p < .001$). Also, one's gatekeeping activity, the extent to which one is a source of information for co-workers, is positively related to information seeking behaviour ($B = .05$; $p < .001$). It was also predicted that one's perception of media utility would be positively associated with the amount of information seeking. While the sign of this relationship is positive, the parameter estimate in the model is not significant ($p > .15$). The fact that lawyers' perceptions of media utility is unrelated to using information sources contradicts previous research on the use of information media, suggesting that their perceptions of utility may not be as important to information seeking behaviour as previous use or habit.

Finally, one's external boundary spanning activity is positively related to the amount of information seeking ($B = .03$; $p < .05$). The theoretical model did not predict a relationship between boundary spanning activity and information seeking, but this result is consistent with previous studies which have found that external boundary spanning is a complementary source of information (Culnan, 1983).

6.2 RELATIVE USE OF ONLINE AND PRINT INFORMATION SOURCES

To explain different levels of **relative** use of online media and print media, a multiple regression model was tested. The model accounted for 30% of the variance. The dependent variable was the ratio of the number of hours per week using online media to the number of hours per week using print media in legal research. To counter values of zero in either the numerator or the denominator, 1 was added to each. The ratio measure was then transformed by calculating the natural logarithm. The regression coefficients are reported in Table 6-2.

Table 6-2
REGRESSION ANALYSIS OF THE RELATIVE USE OF ONLINE AND PRINT INFORMATION MEDIA
(N = 492)

Variable	r	Parameter Estimate	Standard Error
Dependent Variable: Log (Online Hrs./Print Hours Per Week)			
Access			
Terminal Presence	.19**	.44***	.08
Cost			
Relative Access Cost	.10*	-.002	.002
Time Cost of Use	.20**	.002*	.001
Task Characteristics			
Task Variability	-.03	.08*	.04
Information Equivocality	.00	-.01	.01
Information Amount	-.07	-.02	.01
Information Use — Output	-.03	-.02	.10
Organizational Characteristics			
Private Practice	-.08*	.01	.18
Urban Info. Environment	.04	-.10	.06
Individual Characteristics			
Number of Years in Profession	.08*	.006	.004
Gatekeeping Activity	-.03	-.03*	.01
Boundary Spanning Activity	-.04	-.02	.02
Perceptions of Print Utility	-.06	-.01	.01
Innovativeness	.12*	.02	.01
Non-Use (Dummy)	.26**	.68***	.08

Note: * $p < .05$
** $p < .01$
*** $p < .001$

Entries are unstandardized parameter estimates. $R^2 = .30$

Because an individual could use both media very little, but have a high ratio of use, a dummy variable was created to isolate the effect of this pattern of use on the relative use of online and print media. The dummy variable, non-use, was coded 1 if an individual did not use either print or online media, and 0 for all others.

6.21 System Access

As expected, system access was positively associated with the use of online information, and the ratio of online media use to print media use ($B = .44$, $p < .001$).

6.22 Cost

Both the cost of access and the time cost of using the media were included in the model. Surprisingly, the relative cost of accessing these two media was not significantly related to the relative use of the media. While the negative sign of this parameter estimate is as expected, the relative cost appears to have no effect on the relative use of these two media by the lawyers ($p > .40$).

As predicted, there is a positive relationship between the value of one's time while using the media and the relative usage of online and print information media ($B = .002$, $p < .05$). The potential for online access to reduce the amount of time spent searching appears to influence the individual's use of media.

6.23 Task Characteristics

The variability of one's task (or a low degree of specialization) is positively associated with the relative use of online to print information sources ($B = .08$; $p < .05$), as predicted. It was also predicted that the equivocality of information dealt with in one's work would be positively related to the relative use of online media. However, this relationship is not supported by the regression model.

The results of previous research on the impact of information equivocality and the use of information media have been mixed. While a high degree of uncertainty in the information one deals with in one's work might lead to increased use of rapid information retrieval, it is more likely that this increased degree of uncertainty may lead to greater use of "scanning" information sources. Of the two media under consideration here, print sources lend themselves

to scanning related information while online sources can limit the amount of scanning one can do. Thus, lawyers who deal with highly equivocal information seem to use print media to a greater extent than lawyers who deal with less equivocal information.

The **amount** of information one seeks in order to gain closure on a question is not related to the relative use of online and print information sources ($p > .05$), contrary to the prediction based on the theoretical model presented in chapter 2. One plausible explanation of this result is related to the role of "habit" in media use. That is, in an environment where one has a high degree of intensity and frequency of information inputs, one may be more inclined to rely on previous information-seeking habits and use the medium of greatest familiarity — in this case, print information sources. This result would suggest the need for further research focused explicitly on the relationship between the amount of information one processes in one's job and one's media use.

It was also predicted that those lawyers who do research for other lawyers, that is, a higher proportion of the information gathered is passed on to others as opposed to being an input into their own casework, would use online information sources to a greater degree. While the direction of this relationship is supported by the data, the parameter estimate is not statistically significant ($p. > .15$). It is likely that those who seek information to be passed on to others use both media extensively; therefore, the value of the ratio of their relative use of online and print information is moderate.

The theoretical model predicted that all four task characteristics — variability, equivocality, amount, and use — would be positively related to the relative use of online information sources. However, only one of these four variables, task variability, is significantly related to the relative use of print and online media. Task characteristics, while related to the general amount of information seeking, do not appear to have a large effect on the relative use of particular media.

6.24 Organizational Characteristics

No relationship was found between one's working in private practice and the relative use of online information media, as predicted. Furthermore, it was predicted that an urban environment would be

negatively related to the use of online. While the influence of this variable is in the predicted direction, the parameter estimate is only marginally significant (p. < .07).

6.25 Individual Characteristics

It was predicted that the number of years in the profession would be negatively related to the relative use of online and print information sources. However, this predicted relationship is not supported by the regression model. The relative use of online information appears not to be related to the length of time one has been practicing law.

The extent to which one is a source of information for others in the organization (gatekeeping) is negatively related to the relative use of online information (B = - .03, p < .05). Furthermore, the extent to which one is a source of information or seeks information outside the organization (boundary spanning activity) does not influence the relative use of online and print media. These results appear to be contrary to previous results based on diffusion theory. That is, one's level of opinion leadership and cosmopoliteness should be positively related to the introduction and use of the newer information media. However, this hypothesized relationship is not supported by the data.

In addition, the previous adoption of computer-based technology, or one's innovativeness, was found not to influence the relative use of online information media. While the sign of this relationship is in the right direction, the parameter is only marginally significant (p <.09). The fact that previous adoption of computer-based technology does not influence the relative use of online media is, indeed, surprising. It was hypothesized that because the learning costs associated with new media would be lower for previous adopters, relative use would be higher. The model does not support this hypothesis.

Finally, one's perception of print media utility is not related to the relative use of these two media, as predicted.

6.3 EXPLAINING USE OF ONLINE INFORMATION

Because print media are the traditional source of information for lawyers, the relative use of online and print media is, to a large extent, a function of the use of online information. That is, lawyers' information needs have been satisfied traditionally through an abundance

of print sources of information. The adoption of the new medium that has been introduced during the past twenty years would be the primary reason for different levels of relative use. Thus, in order to gain a better understanding of the motivation to use online information technology, two logistic regression models were tested — one for the entire sample, and one for previous adopters. Logistic regression was chosen because the distribution of the dependent variable was bimodal. In the case of the entire sample, 65.8% did not use online information, while the remaining 34.2% did use this medium. A similar bimodal distribution occurred for the hours per week of online use by previous adopters of the medium — half using online less than one hour per week and the other half using online more than one hour per week. The results of these models are presented in Tables 6-3 and 6-4.

Table 6-3
FACTORS AFFECTING THE AMOUNT OF USE OF ONLINE — TOTAL SAMPLE (N = 419)

Variable	Beta	Std. Error
Access		
Terminal Presence	2.45***	.38
Cost		
Relative Access Cost	.01	.01
Time Cost of Use	-.001	.004
Task Characteristics		
Task Variability	.69**	.24
Information Equivocality	.12	.07
Information Amount	.04	.05
Information Use — Output	.66	.55
Organizational Characteristics		
Private Practice	-.21	.86
Urban Environment	-.35	.36
Individual Characteristics		
Law Years	-.003	.02
Gatekeeping Activity	.12	.08
Boundary Spanning Activity	.01	.09
Perceptions of Utility	-.03	.03
Innovativeness	.12*	.06

NOTE: * $p < .05$
** $p < .01$
*** $p < .001$
Entries are standardized parameter estimates (betas). $R^2 = .50$

Table 6-4
FACTORS AFFECTING THE AMOUNT OF USE OF ONLINE BY PREVIOUS ADOPTERS
(N = 164)

Variable	Beta	Std. Error
Access		
Terminal Proximity	.51***	.12
Cost		
Relative Access Cost	.0003	.01
Time Cost of Use	-.004	.006
Task Characteristics		
Task Variability	-.02	.27
Information Equivocality	.04	.10
Information Amount	.03	.07
Information Use — Output	-.29	.65
Organizational Characteristics		
Private Practice	.30	1.13
Urban Environment	-1.41*	.64
Individual Characteristics		
Law Years	.04	.03
Gatekeeping Activity	.20*	.10
Boundary Spanning	-.02	.11
Perceptions of Print Utility	-.08	.04
Perceptions of Online Utility	.08**	.02
Innovativeness	.11	.08

NOTE: * $p < .05$
** $p < .01$
*** $p < .001$
Entries are standardized parameter estimates (beta). $R^2 = .29$

For the total sample, three variables explain the use of online technology — the presence of a terminal to access online information (B = 2.45; $p < .001$), one's task variability (B = .69; $p < .01$), and one's previous adoption of computer-based technology (B = .12; $p < .05$). Each of these variables, as predicted in the model in chapter 2, have a positive influence on the use the online medium. It is also worth noting that, of these three variables, both access and task variability had a significant influence on the relative use of online and print media, in the previous analysis.

It appears that access is the key determinant of online information use in the general lawyer population, and is controlling the variance in most of the other variables in the model. A closer examination of

adopters' use of online information is warranted (Table 6-4). The primary influence on the amount of online use by previous adopters is the **proximity** of the terminal to one's work space ($B = .51$, $p < .001$). The only other variables which are significantly related to the amount of use by this group of users is one's perception of online utility ($B = .08$, $p < .01$), and an urban information environment ($B = -1.41$;$p < .05$).

6.4 SUMMARY

The results presented in this chapter suggest that the amount of research a lawyer performs is primarily a function of one's information need and task characteristics. In addition, resource constraints, especially the value of one's time, affect the amount of research done.

Online use is influenced first and foremost by access. It is also influenced (but in the opposite direction) by those variables which influence the amount of information seeking.

These results suggest that the motivation to do legal research and the choice of information sources used in research is multi-dimensional. The task that remains is to uncover and explain the dimensions of legal research. This task is the focus of the next chapter.

7. DIMENSIONS OF LEGAL INFORMATION MEDIA USE

From the analysis thus far, it appears that the relative use of these media for information seeking is a function of both the need for information **and** the adoption of online technology. The variables which have a positive effect on the relative use of online databases (Table 6-2) also have an effect on the amount of information seeking (see Table 6-1) but in the opposite direction, generally.

The theoretical model presented in chapter 4 suggested that there is systematic variation in the use of media for information seeking in professional work. The question that remains to be answered is whether the cost, task-related, organizational and individual variables can be combined functionally in more than one way for different groups of users, such that these functional combinations help explain the dimensions of information seeking in legal research.

Four groups of users were created based on their relative use of these two media — (1) high use of both media, (2) high use of print, low use of online, (3) low use of print, high use of online, and (4) low use of both media. An examination of the group means on the discriminating variables (Table 7-1) suggests that the groups do differ on these characteristics. While these variables appear to have the ability to discriminate between the groups, we are interested in the multivariate differences between the groups. Canonical discriminant analysis, a technique that allows for the simultaneous analysis of the independent variables in relation to each group and to predict group membership as a function of values on the discriminating variables, was performed. The purpose of this analysis is to isolate the systematic variation in the instrumental use of information media in professional work.

From the discriminant analysis, three statistically significant functions emerged. An examination of the total structure coefficients (see Table 7-2) allows us to interpret what the discriminant functions represent. The structure coefficients are zero-order correlations between each variable and each function, and thus summarize the contribution each variable makes to each function, independent of the effects of other discriminating variables. Because the structure

Table 7-1
USER GROUP MEANS ON DISCRIMINATING VARIABLES

Variable	Group 1 (Multi-Users)	Group 2 (Print Users)	Group 3 (Online Users)	Group 4 (Non-Users)
	N = 60	N = 103	N = 105	N = 228
Relative Access Cost	36.86[a] (.74)	16.68[c] (- .06)	24.37[b] (.23)	10.73[d] (- .30)
Time Cost of Use	134.17[ab] (.04)	135.31[ab] (.06)	142.33[a] (.23)	126.03[b] (- .15)
Task Variability	2.40[a] (- .07)	2.30[a] (- .19)	2.50[a] (.06)	2.52[a] (.09)
Information Amount	3.43[a] (- .001)	3.47[a] (.06)	3.40[a] (- .04)	3.42[a] (- .01)
Information Equivocality	3.33[a] (.31)	3.20[ab] (.12)	3.13[bc] (.03)	2.99[c] (- .17)
Information Use (Output)	.76[a] (.31)	.67[ab] (.01)	.70[ab] (.13)	.62[b] (- .16)
Private Practice	.75[b] (- .27)	.78[b] (- .20)	.89[a] (.11)	.90[a] (.13)
Urban Information Environment	.81[a] (.35)	.63[ab] (- .03)	.68[a] (.06)	.59[b] (- .12)
Number of Law Years	7.04[b] (- .38)	9.52[a] (- .11)	10.94[a] (.04)	12.03[a] (.16)
Gatekeeping Activity	6.77[a] (.64)	5.72[b] (.23)	5.13[c] (.01)	4.34[d] (- .32)
Perception Of Print Media Utility	11.03[a] (.13)	11.12[a] (.18)	10.99[a] (.10)	10.53[b] (- .18)
Innovativeness	7.35[a] (.39)	5.75[b] (- .09)	7.61[a] (.47)	5.08[c] (- .29)

NOTE: Entries are means, with standardized class means in parentheses. Means with the same letter are not significantly different ($p < .05$).

coefficients are not affected by other variables, they can serve as a guide to the meaning of each function and can be interpreted in much the same way as factor loadings in factor analysis (see Klecka, pp. 33-4).

Table 7-2
CORRELATIONS OF SIGNIFICANT FUNCTIONS AND DISCRIMINATING VARIABLES FOR EXPLAINING TYPES OF MEDIA USE
(N = 496)

(Canonical Discriminant Analysis)

Discriminating Variable	Function		
	I	II	III
Gatekeeping Activity	.65*	-.37	-.00
Boundary Spanning Activity	.36*	-.28	.13
Number of Years in Profession	-.35*	.26	.12
Information Equivocality	.34*	-.17	.07
Information Use — Output	.34*	-.09	.00
Urban Info. Environment	.30*	.05	-.23
Innovativeness	.56	.60*	.29
Private Practice	-.26	.43*	-.02
Task Variability	-.13	.33*	-.23
Information Amount	.01	-.13*	.06
Relative Access Cost	.71*	.24	-.29
Time Cost of Use	.21	.18	.48*
Perception of Print Media Utility	.27	-.13	.43*

NOTE: Entries are total structure coefficients which are zero-order correlations between each variable and each discriminant function. All significant functions are shown. The asterisk (*) indicates the highest absolute correlation for each row for the three significant functions.

The first, and dominant function, is correlated most strongly with the relative access cost of print and online information sources. At first glance, we would be tempted to "name" this function a cost function. However, an examination of other variables which have a higher correlation with this function than with the other two — gatekeeping activity, boundary spanning activity, number of years in the profession, information equivocality, information as output of one's work, and an urban information environment —suggests that this function is more aptly conceptualized as one's "need" for information, as predicted. The variables that give meaning to this function are those variables which affect the amount of information seeking performed in one's work, with the same direction of the effect. And while the relative access cost of online to print media is highly correlated with this function, the **positive** correlation between cost and this function is contrary to demand theory, and suggests that to identify this

function as a cost function would be misleading. The relative cost is also highly correlated with the third dimension, and the direction of the correlation is as expected. This first function accounts for 74% of the variance in the distance between groups.

The second canonical discriminant function is correlated most strongly with innovativeness, private practice, and task variability. This function, then, could be conceived of as one's "autonomy" in one's work. That is, those lawyers who are in private practice, who have experience with many forms of electronic media and with high task variability have more control in the definition of their information environment and their choice of media (Spenner, 1983). The autonomy function accounts for 17% of the variance.

The third, and the weakest discriminant function accounts for only 9% of the variance. It is correlated with the cost of use and the perceptions of print media utility. An examination of the group means on perception of print media utility suggest that the groups do not differ greatly on this measure, while the groups differ greatly on the time cost of media use. In addition, the relative cost of access has a strong correlation (and in the right direction) with this dimension. It seems that this function is best conceived of as a "cost sensitivity" function.

Because the structure coefficients are zero-order variable-function correlations, they report the unique contribution of each variable to each function, independent of the effects of other variables. As such, they tell only part of the story. The standardized canonical discriminant function coefficients (Table 7-3) take into account the interrelationships among all the variables simultaneously and give an indication of the relative influence of each variable on each function. These coefficients reveal which variables contribute most to determining individual scores on each function, and can be interpreted in the same way as standardized regression coefficients (see Klecka, p. 29). The absolute magnitude of each standardized function coefficient, therefore, allows us to compare the variates in terms of their relative ability to distinguish the four user groups.

Table 7-3
STANDARDIZED COEFFICIENTS OF DISCRIMINATING VARIABLES ON FUNCTIONS EXPLAINING TYPES OF INFORMATION MEDIA USE
(N = 496)

(Canonical Discriminant Analysis)

Discriminating Variable	Function		
	I	II	III
Gatekeeping Activity	.36	-.51*	-.16
External Boundary Spanning	.16*	-.14	.13
Number of Years in Profession	-.34*	.29	-.07
Information Equivocality	.13	-.13	.12
Information Use — Output	.08	.21*	.08
Urban Info. Environment	.01	.01	-.30*
Innovativeness	.30	.63*	.45
Private Practice	-.28*	.19	-.04
Task Variability	.25	.35*	-.35
Information Amount	-.06	-.11*	-.01
Relative Access Cost	.53	.30	-.72*
Time Cost of Use	.12	.06	.64*
Perception of Print Media Utility	.18	-.11	.46*
Canonical Correlation	.49	.26	.19
Likelihood Ratio	.680	.896	.963
F (approx.)	6.02	2.70	2.02
Degrees of Freedom	39.00	24.00	11.00
Significance	.001	.001	.02
Eigenvalue	.31	.08	.04
Proportion of Variance	.74	.17	.09

NOTE: Entries are standardized canonical coefficients which indicate the relative contribution of each variable to the score of a particular factor when controlling for the effect of all other variables. The asterisk (*) indicates the highest absolute correlation for each row for the three significant functions.

At first glance, the standardized canonical coefficients appear to tell a different story than our interpretation of the meaning of each function. An analysis of the standardized coefficients suggest that eight variables — relative cost, the time cost of use, gatekeeping activity, the number of years in the profession, the type of practice, innovativeness, and two task characteristics (variability and information output) contribute most to the differentiation of user groups. These variables are ordered differently on each of the three functions.

The variables that contribute most to the score on the first function are: (1) relative access cost, (2) gatekeeping activity, (3) number of years in the profession, (4) innovativeness, (5) type of practice, and (6) task variability.

On the second function, the variables that contribute most to the score are: (1) innovativeness, (2) gatekeeping activity, (3) task variability, (4) relative cost, (5) number of years in the profession, and (6) the relative frequency with which information is the output of one's work.

On the third function, the variables that contribute most to the discriminant score are: (1) relative cost, (2) time cost of use, (3) perception of print media utility, (4) innovativeness, (5) task variability, and (6) a rural information environment.

We would hope to have a clearer interpretation of these standardized coefficients. For example, only two of the six variables highly correlated with the first function (Table 7-2) have high standardized coefficients on this function. However, the influence of each of the variables that are highly correlated with this dimension is in the proper direction. This is likely due to the fact that the standardized coefficients report the contribution of each variable to the score on each function, controlling for the influence of all other variables.

The second function appears to be influenced most by innovativeness and previous experience with electronic media, as well as task variability. In addition, the number of years in the profession also has a high standardized coefficient for this function. Each of these variables can be interpreted as contributing to the degree of one's autonomy in one's work. In addition, because three of the four variables that were highly correlated with this function have higher standardized coefficients on this function than on the other two, our interpretation of this function as representing one's autonomy appears to be supported by the standardized coefficients.

The third function is associated most with the two cost measures and perception of print media utility. The fact that relative access cost has a stronger correlation with function one in Table 7-2 but contributes a large amount to the calculation of the score on function three in Table 7-3 is likely due to the fact that this variable is highly correlated with the size of the organization, as stated earlier. The negative

relationship between the relative access cost and this function and the large positive relationship between one's time cost and the score on this third function supports the interpretation of this function as a "cost sensitivity" function.

The interpretation of these standardized coefficients is less clear than we would like, and less clear than our interpretation of the total structure coefficients in Table 7-2. Because three significant functions emerged in the discriminant analysis (the maximum number possible), the four groups appear to be different. To see whether this interpretation of the discriminant functions is warranted, logistic regression was used to examine the differences between groups.

The first logistic regression analyzed the differences between "users" and "non-users." For this analysis, the dependent variable was "non-users," [1] with low users of both media coded as 1 and all others coded as zero. We are interested in what makes this group different from the other three user groups. The results of this logistic regression are reported in Table 7- 4.

The "non-users" differ from the other three groups on those variables which were found to influence the amount of information seeking — gatekeeping, number of years in the profession, and information equivocality. Three other variables that were found to affect information seeking, the cost of use, an urban environment, and the amount of information, were not statistically significant in the logistic model, but the direction of their influence is in the opposite direction from their influence on the amount of information seeking.

Next, logistic regression was used to examine the differences between the high users of both media (complementary users) and the two groups of users who reported a high relative frequency of use for either print or online. High users of both media were coded 1 and the other two groups were coded 0 for this analysis. The results of the logistic regression, from which the non-users were omitted, are reported in Table 7-5.

1 Literally speaking, most members of this group do use media. While they do not use online databases, they are low users of print media. They are called "non-users" here to distinguish their type of use from the other groups.

Table 7-4
LOGISTIC REGRESSION OF THE DIFFERENCES BETWEEN MEDIA USERS AND NON-USERS (N = 496)

Variable	Beta	Std. Error
Cost		
Relative Access Cost	-.003	.006
Time Cost of Use	-.001	.003
Task Characteristics		
Task Variability	-.19	.16
Information Equivocality	-.08*	.04
Information Amount	-.02	.04
Information Use — Output	-.15	.38
Organizational Characteristics		
Private Practice	.63	.76
Urban Environment	.09	.22
Individual Characteristics		
Law Years	.03*	.01
Gatekeeping Activity	-.12**	.05
Boundary Spanning Activity	-.13*	.06
Perceptions of Utility	-.05*	.02
Innovativeness	-.06	.04

NOTE: * $p < .05$
** $p < .01$
*** $p < .001$
Entries are standardized parameter estimates (betas). $R^2 = .32$

The heavy users of both media differ on the two cost measures from the two groups that use one medium predominantly. That is, they have a higher relative cost of the two media and a lower time cost of using the two media. In addition, the group of heavy users appears to be made up of younger lawyers. The fact that the heavy users have a higher relative cost of access than the other two groups suggests that they are relatively insensitive to this aspect of the cost of media use. Their lower time cost is consistent with the theoretical relationship between time cost and the amount of information seeking.

Table 7-5
LOGISTIC REGRESSION OF THE DIFFERENCES BETWEEN HIGH USERS OF BOTH MEDIA AND USERS OF ONE MEDIUM PREDOMINANTLY
(N = 268)

Variable	Beta	Std. Error
Cost		
Relative Access Cost	.02*	.007
Time Cost of Use	-.003*	.001
Task Characteristics		
Task Variability	.34	.23
Information Equivocality	.13	.09
Information Amount	.01	.06
Information Use — Output	.69	.60
Organizational Characteristics		
Private Practice	.21	.92
Urban Environment	.01	.42
Individual Characteristics		
Law Years	-.08**	.03
Gatekeeping Activity	.35**	.10
Boundary Spanning Activity	-.05	.09
Perceptions of Utility	-.05	.09
Innovativeness	-.02	.06

NOTE: * $p < .05$
** $p < .01$
*** $p < .001$

Entries are standardized parameter estimates (betas). $R^2 = .31$

Finally, the two user groups for whom the media appear to be substitutes were compared using a logistic regression model. For this analysis, lawyers who reported a higher than average use of online media and a lower than average use of print media were coded as 1 and lawyers who used predominantly print media were coded as 0. The results of this logistic regression are reported in Table 7-6. These two groups differed on their relative access cost, task variability, and innovativeness. That is, lawyers who report greater than average use of online and lower than average use of print media appear to be in smaller firms, as represented by a higher relative access cost. They also have a higher degree of task variety, and more experience with

computer-based technology. This group has a higher degree of autonomy.

Table 7-6
LOGISTIC REGRESSION OF THE DIFFERENCES BETWEEN PRINT USERS AND ONLINE USERS (N = 208)

Variable	B	Std. Error
Cost		
Relative Access Cost	.02*	.008
Time Cost of Use	.006	.005
Task Characteristics		
Task Variability	.67**	.25
Information Equivocality	-.004	.08
Information Amount	-.05	.05
Information Use — Output	.58	.63
Organizational Characteristics		
Private Practice	-.14	.87
Urban Environment	-.42	.37
Individual Characteristics		
Law Years	.02	.03
Gatekeeping Activity	-.14	.07
Boundary Spanning Activity	-.10	.03
Perceptions of Utility	-.05	.03
Innovativeness	.16**	.06

NOTE: * $p < .05$
** $p < .01$
*** $p < .001$

Entries are standardized parameter estimates (betas). $R^2 = .22$

The results of the three logistic regression models of differences between the four groups support our interpretation of the canonical discriminant functions. The relative success of the set of discriminating variables in differentiating the user groups is summarized in Table 7-7. The group means, in standardized form, for each of the three significant functions suggest that the groups vary by their need for information, their degree of autonomy, and cost sensitivity, as predicted.

Table 7-7
GROUP CENTROIDS ON CANONICAL DISCRIMINANT FUNCTIONS IN DISCRIMINANT SPACE
(N = 496)

User Group	Function		
	I	II	III
High Print Use, High Online Use	1.07	- .07	- .31
High Print Use, Low Online Use	.15	- .39	.23
Low Print Use, High Online Use	.31	.46	.20
Low Print Use, Low Online Use	- .55	.02	- .11

Furthermore, if the group centroids are plotted in discriminant space, they are separated well along at least one dimension. Figure 7-1 shows that the first dimension clearly separates multi-users and non-users, with intermediate groups (online users and print users) moderate on this dimension. The second function separates individuals who report greater than average use of online databases and lower than average use of print media from individuals who use predominantly print media, with multi-users and non-users of both media scoring moderately on this dimension.

Figure 7-2 shows that the third function separates the two groups that have a high relative frequency for only one medium (online or print) from multi-users and non-users.

Overall, the configuration suggests:

(1) those individuals with a high need for information in their work (function I) and low cost sensitivity (function III) use the media in a complementary fashion — as do low users of both media,

(2) for those individuals who have moderate need for information and experience a greater degree of cost sensitivity (i.e., a high cost of their time and a low relative cost of online and print access) the media are substitutes in their information seeking, and

(3) the predominant use of online information rather than print is a function of autonomy — the degree of control that one has in shaping one's information environment in one's work.

Figure 7-1
GROUP MEANS ON DIMENSIONS OF INFORMATION MEDIA USE: INFORMATION NEED AND AUTONOMY DIMENSIONS

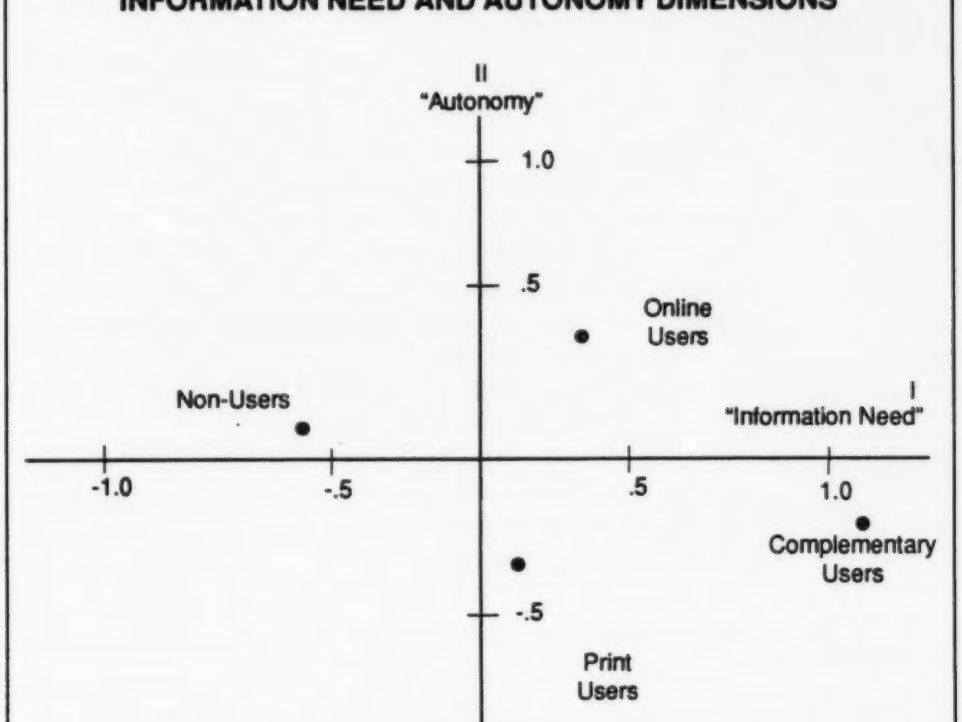


Figure 7-2
GROUP MEANS ON DIMENSIONS OF INFORMATION MEDIA USE: NEED AND COST DIMENSIONS

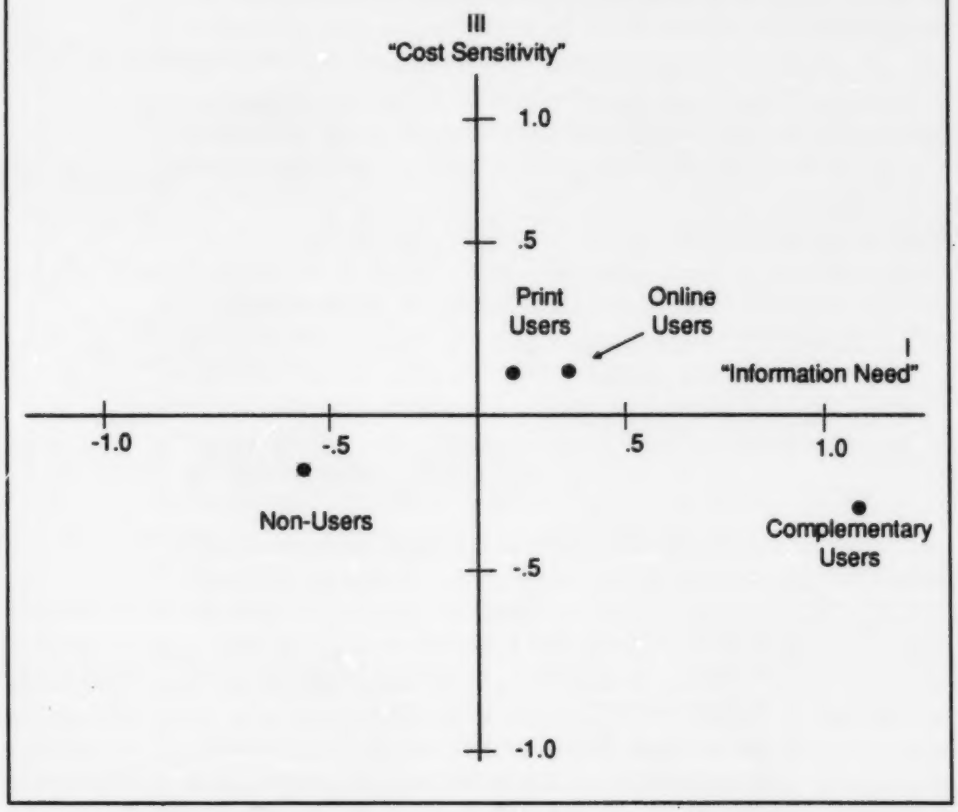
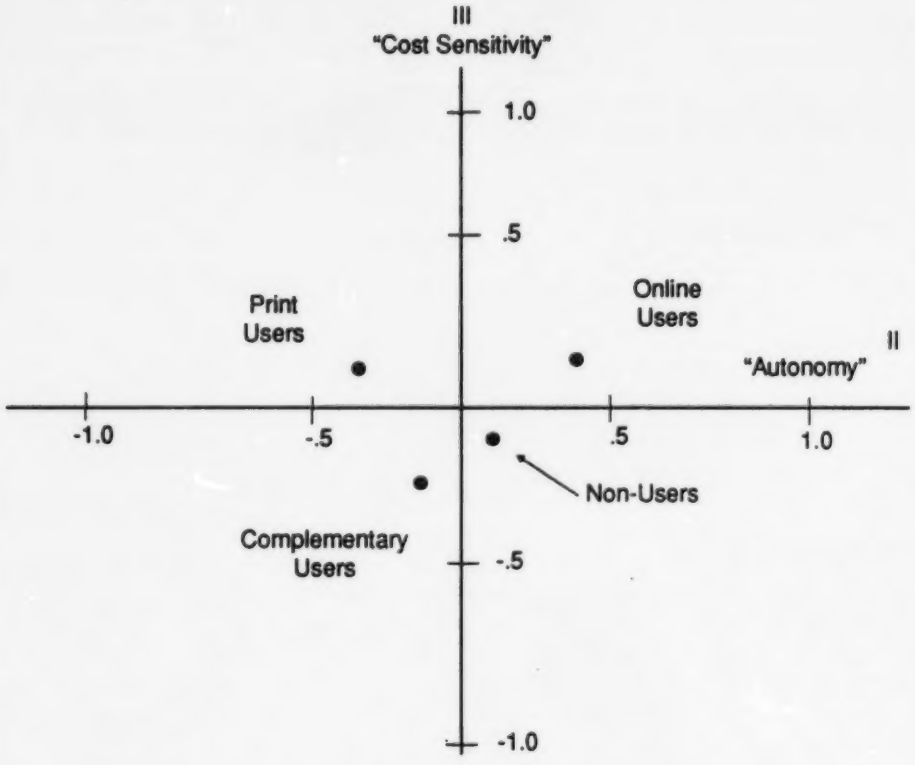


Figure 7-3
GROUP MEANS ON DIMENSIONS OF INFORMATION MEDIA USE: AUTONOMY AND COST SENSITIVITY



Finally, it is important to note that the cost function is the least important of the three significant dimensions. This result might suggest that lawyers are relatively insensitive to the cost of information seeking. While lawyers are very sensitive to the cost of their time, as shown in the analysis of the general level of information seeking, the relative cost of access may be less important.

The fact that the cost dimension accounts for the smallest percentage of variance between the four groups of media users, especially for lawyers with moderate information needs, warrants closer attention. It appears from this analysis that those with moderate information needs are the most sensitive to cost. This difference deserves further research attention.

8. CONCLUSION

Information markets today are characterized by multiple media formats through which the same information content can be delivered. What has remained unclear is to what extent, and under what conditions, the new media are complementary to older media or serve as substitutes for the established media. It would be too simplistic to state that either case exists for all professionals. This study has shown that media use for instrumental information seeking is, in fact, a complex behaviour that cannot be explained simply by economic, organizational, media, or individual characteristics alone. For the professional, the choice of media format through which to acquire work-related information is a function of need, cost sensitivity, and one's control over one's information environment.

The study has attempted to do three things. First, we have attempted to explain the general level of information seeking in a professional work environment. As predicted, the cost of one's time has a negative effect on the amount of information sought. This analysis also demonstrated the positive effect of three task characteristics — information equivocality, the amount of information, and information as the primary output of one's work — on the amount of information seeking (Table 8-1).

Second, we have attempted to explain the relative use of online and print media in seeking information. The results of this analysis show that here, too, the cost of using the media affects the use of media. Those with higher time costs have more to gain from online because of the greater speed of this medium in gaining access to large amounts of information. While the cost of using the media was significant, the relative cost of access was not shown to be a significant factor affecting the relative use of online information (Table 8-1). This result suggests that the demand for media access may, in fact, be price inelastic.

When the frequency of online use was examined separately for previous adopters, the closer the terminal was to one's own desk had a positive affect on use of the medium. In addition, those in an urban environment made less use of online information than those lawyers practicing in a rural environment, suggesting the relative advantage of this medium for overcoming limited information sources in rural

areas. As expected, the amount of online use was positively associated with one's perception of the utility of online information sources.

TABLE 8-1
SUMMARY OF EXPECTED AND OBTAINED RESULTS

Variable	Information Seeking		Relative Use Online/Print	
	Expected	Result	Expected	Result
Cost Characteristics				
Use Cost	-	-	+	+
Access Cost	NA	NA	-	0
Task Characteristics				
Variability	+	0	+	+
Information Equivocality	?	+	+	0
Information Amount	+	+	+	0
Output	+	+	+	0
Organizational/Environmental				
Private Practice	+	0	0	0
Urban Environment	+	+	-	-
Media Access	NA	NA	+	+
Individual Characteristics				
Number of Years in Prof.	-	-	-	0
Gatekeeping	+	+	+	-
Boundary Spanning Activity	?	+	+	0
Innovativeness	NA	NA	+	0
Perceptions of Media Utility	+	0	NA	NA

Third, by characterizing individuals by the frequency with which they use these two media in seeking information, a structure of information seeking emerged. Media use for instrumental information seeking can be seen as a function of need, autonomy, and cost sensitivity. Information need, associated with task characteristics, distinguished individuals by the amount of information sought. The level of autonomy, or control over one's work and information environment separated those who used online databases predominantly and those who used print media predominantly. Cost sensitivity separated those for whom one medium is a substitute for the other medium from those who use the media in a complementary fashion.

While those that use one medium with a relatively higher frequency differ in their degree of autonomy, further study of the differences

between these groups is warranted. An individual's score on the autonomy function is influenced in a positive direction by the number of years in the profession, one's task variability, innovativeness, and working in private practice. The difference, then, between these groups is not so much an orientation to electronic or print media (McLeod and McDonald, 1985) as it is one's control of one's information environment.

One of the more important results from this study is the fact that the cost dimension was the weakest in separating the four groups of users. This result, accompanied by the fact that the relative access cost of the media did not affect the amount of use suggests that, indeed, lawyers may be relatively insensitive to the cost of media access. However, this conclusion would be too simplistic. A more accurate description of the relationship between cost and media use can be found in the structure of media use and the dimensions of information seeking generally.

Lawyers' sensitivity to the cost of using the media varies according to information needs. First, the time cost of use was found to be significant in explaining both the amount of information sought and the relative use of online information. Second, the cost of using the media can be viewed as a resource constraint which has the effect of limiting the number of media used, but only for those with moderate information needs. For those with a high level of information need the cost of using the media is relatively unimportant.

It was also found that in those cases where the relative price of access was low — i.e., that the hourly cost of access to online and print was about equal — there is a tendency to use one medium predominantly. This result confirms a sensitivity to price. Again, though, the need for information affects this price sensitivity. The fact that those with the highest relative price tend to use both media frequently suggests that for individuals with a greater need for information in their job, the price elasticity of demand may be low.

These findings have important implications for the study of media use in a professional context. Too often, the use of new media is studied as a unidimensional concept (Craig, 1978; Hiltz, 1978; Lippitt, 1981). This study supports a more complex view of media use. There is systematic variation in the use of media to acquire information and this variation is explained by more than one factor.

The results also suggest that we should incorporate cost measures into our models of media use. When media are used for instrumental information seeking, cost has a significant effect, as shown here. But, further questions remain to be answered. Future studies should look at (a) the price elasticity of demand for information media for different groups of users, and (b) the effect of cost on other mediated communication events in the practice of law. While cost may have an impact on the acquisition of external information, what effect does cost have on other types of media use within the organization?

In addition, lawyers may not be representative of other types of professionals. While lawyers provide a means for the reliable measurement of the cost of using the media, the fact that their costs are routinely passed on to clients may make them different than other professionals in an organizational context. Whether there is a difference in the effect of cost when these costs are part of a larger organization's budget and pricing policies, and therefore, more removed from the individual, than when they are directly incorporated into the service provided and controlled by the individual worker, as they are with lawyers, demands further study.

The study suggests that to define information markets by medium or by message content would not be accurate. To define an information market by medium would suggest that print and online delivery of information are complementary. The present study shows that this is not always the case. On the other hand, to define an information market by information content suggests that online and print media (in the delivery of legal information) are substitutes. The study shows that this, too, is not always the case. What is needed is a more precise conceptualization of information markets and appropriate submarkets. To do less would be an over-simplification.

Finally, this study has implications for the ongoing discussion of the role of technology in the dissemination of information. Implicit in the results of this study is the idea that the characteristics of print and online media affect the acquisition of information.

Like other telecommunication technology, online technology allows one to overcome limitations of space and time when acquiring information. Unlike printed information sources which require the information-seeker to be present in the same location as the message content, it is not necessary to be present in the same location where

the information source is physically stored when acquiring information through online technology. Moreover, in addition to allowing one access to sources stored at one location, online databases allow one to gather, at a distance, sources stored at multiple locations. For example, one of the analyses in this study showed that among online users, rural lawyers used online technology to a greater extent than urban lawyers.

Online technology also allows for an increase in the velocity of message transmission. Because the production cycle for online databases is shorter than that of print, information can be delivered to the user more quickly through online databases than print media.

As this study has shown, it is not only one's need for information that influences the use of print or online media. Rather, it is one's sensitivity to cost and one's autonomy, or control of one's information environment, that will have an impact on who will benefit from the use of online technology to acquire information.

APPENDIX I
SURVEY QUESTIONNAIRE

This is a sample of the questionnaire that was distributed as part of the research.

INFORMATION SOURCES IN LEGAL RESEARCH

DIRECTIONS: Our purpose is to study the use of legal information sources by lawyers. This study is sponsored by the Canadian Law Information Council (since 1990, Canadian Legal Information Centre). Most questions ask you to place an "X" in front of the appropriate response or to circle the appropriate number. A few questions ask you to write in your comments. You may write in additional comments whenever you wish to do so.

The information will not be associated with either you or your firm. The individual sources of all information will be held in **strict confidence** by the research staff conducting this study. The number printed on the last page will be detached when we receive your questionnaire. This will allow us to remove your name from our mailing list so we will not send you additional mailings. The number **will not** be associated with your responses in any way.

When you have completed the questionnaire, please mail it in the postage-paid envelope which is provided. Thank you.

If you have any questions, please contact:

Professor Mark Vale,
Division of Social Science,
York University,
North York, Ontario M3J 1P3
(416) 736-5058

LEGAL RESEARCH ACTIVITY

In this section, we would like to know about the legal research that you perform in your practice of law and the information technology available in your firm or office.

1. How would you characterize the amount of legal research you do in your practice of law? (*Please place an "X" in the box preceding the appropriate response.*)

   [ ] A large amount
   [ ] A moderate amount
   [ ] A little
   [ ] Very little
   [ ] None

2. How often does another person perform your legal research tasks for you? (*Place an "X" in the appropriate box.*)

   [ ] Always
   [ ] Frequently
   [ ] Sometimes
   [ ] Seldom
   [ ] Never
   [ ] Does not apply

3. How often do you perform your legal research tasks yourself? (*Please place an "X" in the appropriate box.*)

   [ ] Always
   [ ] Frequently
   [ ] Sometimes
   [ ] Seldom
   [ ] Never

4. During an average week, approximately how many hours do you spend in legal research either with one of the available online databases such as QL Systems or using available print sources such as *Dominion Law Reports* or *Supreme Court Reports*, legal textbooks, law journals and other legal information sources?

   ___ ___ hours.

5. What percentage of your total work time would you say this information searching occupies?

   ___ ___ ___ %

6. Listed below are some reasons for using information in the practice of law. How often is each an important reason for you to seek legal information? (*Please circle the appropriate number, where **1 = almost never important** and **5 = almost always important.***)

	Almost Never Important				Almost Always Important
To solve a particular problem	1	2	3	4	5
To gain exhaustive access to a particular topic	1	2	3	4	5
To gain current awareness & keep up-to-date	1	2	3	4	5
To get supplemental information	1	2	3	4	5
To get historical information	1	2	3	4	5
To get the most timely information	1	2	3	4	5
To browse information sources for new things I may have missed or not thought of	1	2	3	4	5

7. How often do you do the following with the results of your legal research? (*Please circle the appropriate response where **1 = never, 2 = seldom, 3 = sometimes, 4 = frequently,** and **5 = always.***)

I use the results directly myself.	1	2	3	4	5
I use the information in conjunction with other lawyers at my firm or office.	1	2	3	4	5
I pass the results on to other lawyers.	1	2	3	4	5

8. Does your office have a law library on site?
(*Please place an "X" in the box preceding the appropriate response.*)

[ ] Yes ☞
[ ] No

If yes, which of the following best describes the location of the law library?

[ ] Library is in personal office
[ ] Library in Secretary's office
[ ] Library in another room, same floor
[ ] Library located on different floor, 1 above or 1 below
[ ] Library is more than one floor away
[ ] Library is in a different building

9. Do you have access to online legal databases at your office?
(*Please place an "X" in the box preceding the appropriate response.*)

[ ] Yes ☞
[ ] No

If yes, which of the following best describes the location of the terminal from which you usually access online databases?

[ ] Terminal in personal office
[ ] Terminal in Secretary's office
[ ] Terminal in another room, same floor
[ ] Terminal located on different floor, 1 above or 1 below
[ ] Terminal is more than one floor way
[ ] Terminal is in a different building

10. Which of the following do you, your assistant, or your secretary currently use in your work? (*Please place an "X" in the appropriate box.*)

Use	Do Not Use	Not Available	
[ ]	[ ]	[ ]	Dictaphone
[ ]	[ ]	[ ]	Computerized Accounting
[ ]	[ ]	[ ]	Computerized Billing
[ ]	[ ]	[ ]	Computerized Calendar Control
[ ]	[ ]	[ ]	Word Processing
[ ]	[ ]	[ ]	Electronic in-house retrieval systems (e.g. precedential material)
[ ]	[ ]	[ ]	Electronic Mail

USE OF PRINT INFORMATION SOURCES

Each of the questions in this section refers to your use of **printed** information sources in your practice of law.

11. Approximately what percentage of your research time do you spend using **printed** information sources?

___ ___ ___ %

12. How would you characterize the frequency of your use of **printed** information sources in your law practice? (*Please place an "X" in the appropriate box.*)

[ ] Every day
[ ] A few times a week
[ ] Once a week
[ ] Once or twice a month
[ ] Less than once a month
[ ] Never

13. During an average week, how much do you use each of the following sources in **printed** form? (*Please circle the appropriate number.*)

	Do not use	Less than 1 hr	1-3 hrs	4-7 hrs	8-11 hrs	12 or more hrs
All Canada Weekly Summaries	0	1	2	3	4	5
Canadian Abridgment	0	1	2	3	4	5
Canadian Charter of Rights Annotated	0	1	2	3	4	5
Canadian Criminal Cases	0	1	2	3	4	5
Canadian Current Law	0	1	2	3	4	5
Canadian Patent Reporter	0	1	2	3	4	5
Canadian Regulatory Reporter	0	1	2	3	4	5
Dominion Law Reports	0	1	2	3	4	5
Dominion Report Service	0	1	2	3	4	5
Dominion Tax Cases	0	1	2	3	4	5
Federal Court Reports	0	1	2	3	4	5
National Reporter	0	1	2	3	4	5
Ontario Appeal Cases	0	1	2	3	4	5
Ontario Reports	0	1	2	3	4	5
Index to the Revised Statutes of Ontario (Updated)	0	1	2	3	4	5
Supreme Court Reports	0	1	2	3	4	5
Statutes of Canada	0	1	2	3	4	5
Statutes of Ontario	0	1	2	3	4	5
Weekly Criminal Bulletin	0	1	2	3	4	5
English law reports	0	1	2	3	4	5
United States law reports	0	1	2	3	4	5
Legal textbooks	0	1	2	3	4	5
Law journals	0	1	2	3	4	5
Other legal information sources (please specify) _____	0	1	2	3	4	5
Non-legal information sources (bulletins, newspapers, economic data, etc.)	0	1	2	3	4	5

14. Listed below are a number of attributes of print information sources. How would you evaluate the **print** information sources you use in your law practice? (*Please circle the appropriate number, where 1 = very poor, 2 = poor, 3 = average, 4 = good, and 5 = excellent.*)

	Very Poor	Poor	Average	Good	Excellent
Timely	1	2	3	4	5
Useful	1	2	3	4	5
Accessible	1	2	3	4	5
Readable	1	2	3	4	5
Organization	1	2	3	4	5
Efficient	1	2	3	4	5
Convenient	1	2	3	4	5
Reliable	1	2	3	4	5
Easy to locate information	1	2	3	4	5
Relevant	1	2	3	4	5
Accurate	1	2	3	4	5
Detail	1	2	3	4	5
Cost	1	2	3	4	5
Amount of information	1	2	3	4	5

ONLINE INFORMATION USE

Each of the questions in this section refers to your use of **electronic online legal databases** in your practice of law.

15. How often do you use computer databases in your legal research? (*Please place an "X" in the appropriate box.*)

[ ] Every day
[ ] A few times a week
[ ] Once a week
[ ] Once or twice a month
[ ] Less than once a month
[ ] Never

☞ If "never," please skip to Question #22, page 9.

16. How long have you used these databases in your firm or department? (*Please place an "X" in the appropriate box.*)

    [ ] less than 6 months
    [ ] 6 months - 1 year
    [ ] 1 - 2 years
    [ ] 3 - 4 years
    [ ] 5 - 6 years
    [ ] 7 or more years

17. Approximately how many hours a week do you spend accessing **online** legal databases?

    ___ ___ hours

18. During an average week, how much do you use each of the following sources in **online** form? (*Please circle the appropriate number.*)

	Do not use	Less than 1 hr	1-2 hrs	3-4 hrs	5-6 hrs	7 or more hrs
All Canada Weekly Summaries	0	1	2	3	4	5
Canadian Criminal Cases	0	1	2	3	4	5
Canadian Patent Reporter	0	1	2	3	4	5
Canadian Regulatory Reporter	0	1	2	3	4	5
Dominion Law Reports	0	1	2	3	4	5
Dominion Report Service	0	1	2	3	4	5
Dominion Tax Cases	0	1	2	3	4	5
Federal Court Reports	0	1	2	3	4	5
National Reporter Service	0	1	2	3	4	5
Ontario Appeal Cases	0	1	2	3	4	5
Ontario Reports Plus	0	1	2	3	4	5
Supreme Court Reports	0	1	2	3	4	5
Statutes of Ontario	0	1	2	3	4	5
Statutory Orders and Regulations of Canada	0	1	2	3	4	5
Weekly Criminal Bulletin	0	1	2	3	4	5
LEXIS	0	1	2	3	4	5
WESTLAW	0	1	2	3	4	5
INFOGLOBE	0	1	2	3	4	5
DIALOG	0	1	2	3	4	5
Other online legal information sources (please specify) _____	0	1	2	3	4	5
Non-legal online information sources (bulletins, newspapers, economic data)	0	1	2	3	4	5

19. Listed below are a number of attributes of online information sources. How would you evaluate the **online** information sources you use in your law practice? (*Please circle the appropriate number, where 1 = very poor, 2 = poor, 3 = average, 4 = good, and 5 = excellent.*)

	Very Poor	Poor	Average	Good	Excellent
Timely	1	2	3	4	5
Useful	1	2	3	4	5
Accessible	1	2	3	4	5
Readable	1	2	3	4	5
Organization	1	2	3	4	5
Efficient	1	2	3	4	5
Convenient	1	2	3	4	5
Reliable	1	2	3	4	5
Easy to locate information	1	2	3	4	5
Relevant	1	2	3	4	5
Accurate	1	2	3	4	5
Detail	1	2	3	4	5
Cost	1	2	3	4	5
Amount of information	1	2	3	4	5

20. How has the use of online information services affected your work? (*Please circle the appropriate number, where 1 = significantly decreased, 2 = decreased, 3 = no effect, 4 = increased, and 5 = significantly increased.*)

	SD	D	NE	I	SI
Quality of your work	1	2	3	4	5
Awareness of available information	1	2	3	4	5
Your decision-making ability	1	2	3	4	5
Your work confidence	1	2	3	4	5
Quantity of work you do	1	2	3	4	5
Time taken to find information	1	2	3	4	5

21. What are the main reasons for your using online databases in your legal research? (*Please answer and then skip to Question #23 on the next page.*)

22. If you do not currently use online databases in your legal research, what are your main reasons for not using these services?

23. Which of the following statements best describes your opinion of the relative strength of online and print delivery of information to satisfy your legal information needs? (*Please place an "X" in the appropriate box.*)

[ ] I consider online information sources a substitute for print sources in my work. If both are available, I would use the online source.
[ ] Online and print sources are complementary. I would use them both, even when both forms are available.
[ ] Print sources satisfy my information needs. I have no need for online access at the present time.

24. In general, which delivery medium (*print or online*) do you prefer to use in your work?

[ ] Print
[ ] Online

24a. Why do you prefer this particular medium?

YOUR PRACTICE OF LAW

In this final section, we would like to know about your information needs and your law practice. Again, all information provided will be held in **strict confidence**.

25. How many professional organizations, other than the Law Society, do you belong to? (*Please place an "X" in the appropriate box.*)

[ ] None
[ ] 1 - 2
[ ] 3 - 4
[ ] More than four

26. Do you serve on any professional committees outside your law practice or department?

[ ] Yes ☞ If yes, how many? _____
[ ] No

27. Listed below are some statements that reflect how lawyers communicate with each other in their work. (*For each question, please circle the appropriate response, where **1 = less than once a month, 2 = once or twice a month, 3 = about once a week, 4 = a few times a week,** and **5 = every day.***)

	Less than once a Month	Once or twice a Month	About Once a Week	A Few Times a Week	Every-day
How often do you recommend work-related information sources to other lawyers in your firm or department?	1	2	3	4	5
How often do other lawyers in your firm or department seek work-related information or advice from you?	1	2	3	4	5
How often do you seek work-related information or advice from lawyers outside your firm or department?	1	2	3	4	5
How often do other lawyers outside your firm seek work-related information from you?	1	2	3	4	5

28. In doing your legal research, how often do you do the following? (*For each of the statements below, please circle the appropriate number, where **1 = never, 2 = seldom, 3 = sometimes, 4 = frequently,** and **5 = always.***)

I use information that can be interpreted in several ways and lead to different but acceptable solutions.	1	2	3	4	5
There is more than one satisfactory solution for problems in my work.	1	2	3	4	5

The information I use in making a decision could mean different things to different people.	1	2	3	4	5
I keep gathering data until an excellent solution emerges.	1	2	3	4	5
I wait until all relevant information is examined before deciding something.	1	2	3	4	5
I go over all available information until the best solution appears.	1	2	3	4	5
I gather all possible information before making a final decision.	1	2	3	4	5

29. In your practice of law, which areas occupied most of your time during the past year? (*Please rank the three areas in which you were working most "1," "2" and "3". Do not rank any area which occupied less than 10% of your time.*)

[ ] Administrative Law
[ ] Civil Litigation
[ ] Constitutional Law
[ ] Corporate/Commercial
[ ] Criminal
[ ] Family Law
[ ] General Practice
[ ] Immigration
[ ] Insurance
[ ] Labour Relations
[ ] Municipal Law
[ ] Patents/Trade Marks/Copyright
[ ] Real Estate
[ ] Research
[ ] Taxation
[ ] Wills and Estates
[ ] I do not currently practice law
[ ] Other, please specify _____

30. In what year were you called to the Bar?

19 ___ ___

31. Which of the following best describes the environment in which you practice law? (*Please place an "X" in the appropriate box.*)

[ ] Private practice
[ ] Government
[ ] Academic
[ ] Judiciary
[ ] Corporation or other private industry
[ ] Public service (e.g., legal clinic)
[ ] Other, please specify _____

32. What is your position in your firm or department?
(Please place an "X" in the appropriate box.)

[ ] Partner
[ ] Associate
[ ] Sole Practitioner
[ ] Other, Title:_____

33. How many lawyers are employed in your firm or department, including partners, associate partners, and other lawyers?
(Please place an "X" in the appropriate box.)

[ ] One
[ ] 2 - 5
[ ] 6 - 9
[ ] 10 - 14
[ ] 15 - 19
[ ] 20 - 24
[ ] 25 - 29
[ ] 30 - 34
[ ] 35 - 39
[ ] 40 - 44
[ ] 45 - 49
[ ] 50 or more

34. How many full-time research lawyers are employed at your firm?

_____ lawyers

35. What is the normal hourly billing rate for your time?

$ ___ ___ ___ .00 per hour

36. In which of the following locations is your principal office located?
(Please place an "X" in the appropriate box.)

[ ] Metropolitan Toronto
[ ] Toronto Area (Durham, Halton, Peel, York)
[ ] London and Middlesex County
[ ] Ottawa
[ ] Waterloo Judicial District, Wellington County
[ ] Hamilton-Wentworth, Niagara
[ ] Other, please specify _____

37. In which category does your annual income, before tax, fall?
(Please place an "X" in the appropriate box.)

[ ] less than $25,000
[ ] $25,000 - $39,999
[ ] $40,000 - $54,999
[ ] $85,000 - $99,999
[ ] $100,000 - $114,999
[ ] $115,000 - $129,999

[ ] $55,000 - $69,999
[ ] $70,000 - $84,999
[ ] $130,000 - $144,999
[ ] $145,000 - $159,999
[ ] $160,000 or more

38. What is your age? (*Please place an "X" in the appropriate box.*)

[ ] Under 30
[ ] 30 - 34
[ ] 35 - 39
[ ] 40 - 44
[ ] 45 - 49
[ ] 50 - 54
[ ] 55 - 59
[ ] 60 or over

39. What is your sex?

[ ] Female
[ ] Male

40. Please use the space below to add any additional comments.

THANK YOU VERY MUCH FOR YOUR COOPERATION.

[Please mail your completed questionnaire in the postage-paid envelope which is provided.]

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